# *Slimewater Creek Density Management Environmental Assessment*

**Bureau of Land Management**
**South River Field Office**
**Roseburg District**

## EA# OR105-99-13

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U.S. Department of the Interior, Bureau of Land Management
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# Chapter 1
# PURPOSE AND NEED FOR ACTION

This chapter provides a brief description of the purpose and need for the proposed action being analyzed in this environmental assessment.

## I. Background

The South River Field Office of the Roseburg District of the Bureau of Land Management (BLM) proposes density management of approximately 204 acres of mid-seral stands through a combination of thinning treatments. The areas proposed for treatment are located in Section 27, T. 30 S., R. 4 W. and Section 9, T. 31 S., R. 4 W. Management recommendations are contained in the Stouts/Poole/Shively-O'Shea Watershed Analysis (pp. 38-40). These stands are located on lands allocated to Late-Successional Reserves (LSR), as described in the *Roseburg District Record of Decision and Resource Management Plan* (ROD/RMP), as amended by the *Record of Decision and Standards and Guidelines for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines in Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl* (p. 3). The ROD/RMP incorporates the analysis contained in the *Roseburg District Proposed Resource Management Plan/Environmental Impact Statement* (PRMP/EIS). The ROD/RMP and the PRMP/EIS incorporate the standards and guidelines contained in the *Record of Decision* (ROD) *for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl and Standards and Guidelines (S&G) for Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl* (April 13, 1994). The project area is located in the South Umpqua River/Galesville LSR (#RO223) on lands that are to be managed to protect and enhance the condition of late-successional and old-growth forest ecosystems. The BLM and the U.S. Forest Service jointly prepared an LSR Assessment (LSRA) which has been reviewed by the Regional Ecosystem Office (REO). The REO determined that the LSRA provides a sufficient framework and context for making decisions on projects and activities within the LSR. The implementation of proposed silviculture activities, as described in the LSRA, which incorporate REO exemption criteria do not require further project-level review by the REO.

## II. Purpose

The ROD (p. B-5) states that "Silvicultural systems proposed for the LSRs have two principal objectives: 1) development of old-growth characteristics including snags, logs on the forest floor, large trees, and canopy gaps that enable establishment of multiple tree layers, and diverse species composition; and 2) prevention of large-scale disturbances by fire, wind, insects, and diseases that would destroy or limit the ability of the reserves to sustain viable forest species populations." Additionally, "Stand management in LSRs should focus on stands that have been regenerated following timber harvest or stands that have been thinned." (ROD, p. B-6) The proposed project

areas are composed of even-aged managed stands that regenerated following past harvest, some of which were later pre-commercially thinned. All of the areas are generally lacking in all of the old-growth characteristics identified in the ROD.

The ROD/RMP (p. 29) directs that "If needed to create and maintain late-successional forest conditions, conduct thinning operations in forest stands up to 80 years of age. This will be accomplished by pre-commercial or commercial thinning of stands regardless of origin (e.g., planted after logging or naturally regenerated after fire or blowdown)."

This environmental analysis serves to provide sufficient evidence and analysis for determining whether to prepare an environmental impact statement (EIS) or a finding of no significant impact (FONSI). It will consider environmental consequences of the proposed action and no action alternatives, in the short and long terms, and at the project and fifth-field analytical watershed levels.

## III. Need for the Proposed Action

In southwest Oregon, wildfires of varying intensity and frequency have occurred through time, resulting in the development of old-growth forests of mixed-age vegetation and a mosaic of spatial arrangement. This complex plant community supports the variety of late-successional species that the LSR is intended to support. Currently, 43 percent of federally-managed lands in the South Umpqua River/Galesville LSR are composed of late-successional forest habitat. The primary objectives for the management of this LSR are the maintenance of current levels of late-successional forest habitat and the active management of young stands for development of late-successional habitat characteristics, so that late-successional forest habitat would eventually comprise 60 to 75 percent of the Federal lands in this LSR. In 40 years the percentage of Federal lands in late-successional habitat condition would reach 55 percent, assuming that the current level of 43 percent can be maintained and protected from major disturbances. Since 55 percent late-successional habitat would still be below the desired levels identified in the LSRA, there is a need to design and implement management activities such as density management, which would accelerate the development of the desired levels of late-successional habitat.

The areas proposed for treatment are located in a vegetation zone characterized by a mixture of Douglas-fir and hardwoods. Without direct and active management of these stands the hardwood component would die out as a result of overtopping and suppression by the conifers. In the absence of disturbance, conifer canopies would remain closed resulting in stagnated growth and small diameter trees. This would also result in a lack of canopy stratification, a deficit of large woody debris, and an absence of shrub and herbaceous growth beneath the forest canopy. These stand characteristics would be inconsistent with the management objectives for the LSR.

Opportunities exist in the proposed project areas to accelerate the development of desired late-successional habitat characteristics that are currently absent. Through the application of the treatments proposed in this assessment, large trees and snags would develop and provide large woody debris on the forest floor. Canopy gaps would be created which would aid in the establishment and maintenance of multiple canopy layers and a more diverse composition of coniferous and deciduous species.

## IV. Project Considerations

1. What manner of treatments could be applied to the selected stands, while maintaining connectivity at the stand and landscape level for species associated with late-successional habitat?

2. How can the proposed actions meet the LSRA coarse wood and snag requirements in both the short and long term?

3. How can the proposed actions maintain water quality and fish habitat while applying density management to control stocking and encourage development of large conifers in riparian areas?

## V. LSRA Criteria

### A. Landscape Level Criteria

Projects should meet the following landscape level criteria identified in the LSRA (page 51):

1. Maintain and enhance connectivity across the landscape for plant and animal species associated with late-successional and old-growth forest habitat.

   The area of checkerboard ownership in the Roseburg District was identified in the LSRA (p. 52) as a key area for maintaining landscape and stand-level connectivity across the northern portion of the LSR. This area also provides a key link between LSR #259 located to the west and U.S. Forest Service block ownership located to the east. Although the portion of the project area in Section 27 is outside the area of greatest concern, application of treatments in this area would help maintain connectivity across the landscape, as well as at the stand level. The areas proposed for treatment are separated by areas that are presently functioning as dispersal habitat, and which would remain untreated. The portions of the project area located in Section 9 are within the area of greatest concern. This area currently functions as dispersal habitat and would continue to function as such following the proposed treatments. Retention of untreated areas in Section 9 would help maintain landscape and stand-level connectivity.

2. Promote the establishment of large blocks of late-successional habitat.

   This criterion is directed at the establishment of "large blocks of interior habitat greater than 200 acres." The project area is made up of large blocks of mid-seral stands, with only a few remnant older trees scattered throughout the stands. Large blocks of late-successional habitat do not currently exist in the vicinity. Section 27 is composed of predominantly mid-seral habitat, of which approximately 129 acres would be treated under the proposed action, with approximately 9 acres of untreated areas interspersed. The 75 acres proposed for treatment in Section 9 are part of a 215-acre block of mid-seral habitat. The proposed treatment of these large areas of mid-seral stands would accelerate the development of late-successional habitat characteristics within these blocks.

3. Enhance spotted owl habitat conditions around centers of activity.

An inactive owl activity center is located in Section 27. The project area is also located within the 1.3 mile median home range (Klamath Province) of seven owl pairs. Suitable habitat on BLM-managed lands within the median home range of five of the seven owl pairs is less than 30 percent. Suitable habitat in the median home range of the remaining two owl pairs is between 30 and 40 percent. Reducing stand density would provide room for development and maintenance of canopy gaps, multiple canopy layers, and increased growth by remaining conifers. The canopy gaps would allow for the establishment of shrubs, hardwoods, and conifers that would develop into second and third canopy layers over time. The ensuing complex of vegetation would provide the type of cover and habitat favored by the northern spotted owl and dusky-footed woodrat, a primary prey of the owls.

The spatial variation of treatments would also result in increased stand diversity over the landscape, creating a vegetative mosaic that mimics the irregular timing and variable intensity of wildfires. This would help provide the varied habitat components needed by other late-successional forest dependent species.

## B. Stand Level Criteria

Proposed treatments must also meet stand level criteria described in the LSRA. Stand management should focus on stands that have been regenerated following timber harvest or stands that have been thinned. The LSRA (p. 75) recommends that mid-seral stands of single-story, even-aged Douglas-fir be treated by density management to develop additional late-successional habitat characteristics. All of the areas proposed for treatment developed as a consequence of previous clearcut harvesting and intensive timber management practices.

Treatments would only be proposed for overstocked conifer stands where hardwoods are being eliminated by suppression, and where canopies are of a single, uniform level. Forest stands that currently exhibit late-successional characteristics or are on a natural trajectory to obtain those characteristics would not be treated.

# Chapter 2
# DISCUSSION OF ALTERNATIVES

This chapter describes the basic features of the alternatives being analyzed in this environmental assessment.

## I. Alternative 1 - No Action

Under this alternative, no density management treatments would be applied to the candidate stands in order to achieve a managed reduction of current stand densities. These stands would remain in their present condition as dense, closed-canopy forest and would continue to develop along current growth trajectories unless altered by a natural disturbance.

No road construction would occur. Identified opportunities for road renovation and upgrading, road closures, and road decommissioning as a part of watershed restoration efforts in the South River Field Office would not be pursued at this time. These activities would require separate analyses and accomplishment under separate authorizations. Indirect and cumulative impacts resulting from roads and past management activities would continue to affect current watershed conditions.

## II. Alternative 2 - Proposed Action

Though old-growth forests of southwest Oregon developed with a history of frequent fire, there are limits to the extent in which fire can be used for manipulation of current vegetative conditions. Concerns over the potential impacts to adjoining private lands and property, and air quality concerns limit the use of fire as a management tool. Mechanical treatment of these stands represents the most effective method of vegetation management available in order to achieve the desired future conditions for suitable spotted owl habitat or old-growth forest. The proposed action would apply a variety of density management treatments to mid-seral stands in the project area. These treatments would mimic natural disturbances to the vegetative communities in a manner that would move the stands toward the "desired future condition" as defined in the South Umpqua River/Galesville LSRA (p. 44).

The following criteria would remain constant across all density management treatments. All trees greater than 20 inches diameter at breast height (DBH) would be retained. All remnant snags, though none were noted during field reconnaissance, would be retained and protected by retaining untreated buffers of trees around them. This would help facilitate their retention and lessen concerns for worker safety. Contract provisions would also stipulate the reservation of all existing down wood.

Selection of leave trees would not be based solely on the retention of the healthiest best formed trees. A percentage of the trees selected for retention would be defective or have broken and deformed tops. Pacific madrones, chinkapins, and big leaf maples would be identified for retention and would be released by removal of adjacent conifers. Minor conifer species would be favored for retention in order to maintain those species as components of the stands. Cable

yarding would be utilized for all density management treatments and would be accomplished with equipment capable of maintaining one-end log suspension and having a minimum of 100 feet of lateral yarding capacity. To prevent damage to residual trees, no felling or yarding would take place between April 15 and July 15, during the bark slip period. The bark slip period is that time of year when active cambial growth can result in the bark being loosely attached and subject to mechanical damage.

Density management treatments would occur within selected Riparian Reserves. Most of the streams in the treatment areas are small in size and intermittent in nature, but some perennial streams are present. A no-entry buffer would be established, adjacent to streams located within Riparian Reserves that are selected for treatment. The no-entry buffer would be of variable width, dependent on topographic and vegetative conditions. The minimum width of the buffer would be twenty feet in order to protect microclimate conditions immediately adjacent to the streams. The specific objectives of the proposed treatments that apply to upland areas, including creation of snags and down wood, would also apply to treated portions of the selected Riparian Reserves. Density management within the Riparian Reserves would include directionally falling trees away from the designated no-entry buffers. Where density management would occur in Riparian Reserves bordering perennial streams, a light thinning within 100 feet of the stream banks and outside of the no-entry buffers would be applied. This light thinning would be designed to maintain a minimum average of 70 percent crown closure as an additional measure for maintaining streamside shading and water temperatures. Areas where treatments would be applied within 100 feet of perennial streams would be limited to north or east aspects where openings would not allow direct solar heating of the streams.

Three different treatments would be applied in the project areas, with interspersed areas left untreated. Application of the treatments would be varied across the project area, to accentuate landscape diversity and break up the existing homogeneity of the current vegetative pattern. The primary treatment would apply a variable spacing prescription to approximately 169 acres, or 83 percent of the areas to be treated in Sections 9 and 27. This variable spacing would be used to release specifically selected trees, and would retain trees across all diameter classes. Approximately 25 acres, or 12 percent, would be thinned to a stocking level of approximately 60-70 trees per acre. Approximately 10 acres, or 5 percent of the area, would be thinned to a broad spacing in which about half the trees would be cut resulting in a stocking level of less than 50 trees per acre. Table 1 provides a summary of the proposed action by treatment type and acres.

Maps of the proposed treatment areas and specific treatments are contained in Appendix C of this analysis. A more detailed description of the individual proposed treatments is contained in Appendix A. Hand piling and burning of the piles would be applied to portions of Units A, B and F in order to reduce potential fire hazard and to provide conditions more favorable for the establishment of shrub species and natural regeneration of conifers beneath the existing canopy.

## Table -1 Description of Proposed Project

**(All values are approximate)**

| AREA | ACRES | TREATMENT METHOD | | | | HAZARD REDUCTION |
|---|---|---|---|---|---|---|
| | | 1 Variable Spacing | 2 60-70 TPA | 3 50% Retention | No Treatment | Hand-pile & Burn |
| A-1 | 10 | | | X | | X |
| A-2 | 3 | | | | X | |
| A-3 | 13 | X | | | | X |
| A-4 | 4 | | X | | | X |
| A-5 | 3 | | | | X | |
| A-6 | 3 | X | | | | X |
| B-1 | 8 | X | | | | X |
| B-2 | 13 | | X | | | X |
| B-3 | 27 | X | | | | X |
| B-4 | 5 | | X | | | X |
| B-5 | 3 | | | | X | |
| B-6 | 25 | X | | | | X |
| C-1 | 3 | X | | | | |
| D-1 | 2 | X | | | | |
| D-2 | 3 | | X | | | |
| D-3 | 7 | X | | | | |
| E-1 | 6 | X | | | | |
| F | 75 | X | | | | X |
| **Total Acres** | **213** | **169** | **25** | **10** | **9** | **183** |

Transects should be conducted following the first winter after treatment to monitor levels of down wood and numbers of snags. These transects would establish whether or not there is a need to fall additional trees to meet LSRA objectives for down wood. If a deficiency in large wood is identified in treated areas adjacent to streams, additional trees would be felled toward the streams to provide additional material. Post-treatment girdling would be used to supplement the number of snags and would be accomplished under a service contract or by district personnel.

This process would be repeated as necessary to obtain the desired levels of down wood and snags within five years of the completion of density management treatments. In order to reduce the potential for increased populations of bark beetles and infestation of the remaining stand, no more than three trees per acre greater than 12 inches in diameter would be felled or girdled in any given year. Girdling or felling of smaller trees would not be expected to create any bark beetle problems.

Access would be provided by existing roads and the construction of approximately 200 feet of temporary road. The temporary road would be constructed, used and decommissioned in the same operating season. Approximately 3.7 miles of road would be renovated. Closure of approximately 2.5 miles of road and decommissioning of 1.5 miles of road is also proposed upon completion of density management. These roads are identified on project maps contained in Appendix C. Road construction, renovation, timber hauling, and road decommissioning activities would be seasonally restricted to the dry season between May 15 and October 15. A summary of proposed construction, renovation and decommissioning is contained in Table 2.

## Table 2 Summary of Road Work

(All values are approximate)

| ROAD # | RENOVATION/ CONSTRUCTION | LENGTH (miles) | SURFACE | DECOMMISSION LENGTH/METHOD (miles) |
|---|---|---|---|---|
| 30-4-27.0 | Renovate | 0.66 | Natural | 1.52 Blocked |
| 30-4-27.1 | Renovate | 0.74 | Natural | 0.74 Blocked |
| 30-4-27.2 | Renovate | 0.24 | Natural | 0.24 Blocked |
| RA-1 | Renovate | 0.21 | Natural | 0.21 Tilled |
| RA-2 | Renovate | 0.09 | Natural | 0.09 Tilled |
| RA-3 | Renovate | 0.27 | Natural | 0.27 Tilled |
| RB-1 | Renovate | 0.08 | Natural | 0.08 Tilled |
| RC-1 | Renovate | 0.05 | Rock | None |
| RD-1 | Renovate | 0.06 | Natural | 0.06 Tilled |
| 30-4-28.0 | Renovate | 0.61 | Rock | None |
| 31-4-9.1 | Renovate | 0.49 | Natural | 0.70 Tilled |
| 31-4-9.3 | Renovate | 0.09 | Rock | None |
| RF-1 | Construct | 0.04 | Natural | 0.04 Tilled |
| RF-2 | Renovate | 0.06 | Natural | 0.06 Tilled |
| **TOTAL** | | 3.65 Reno.<br>0.04 Const. | | 2.50 Blocked<br>1.51 Tilled |

## III. Alternatives Considered but Eliminated From Detailed Study

### A. No Removal of Material

Retention on site of all timber designated for cutting was considered as an alternative to the yarding and removal of merchantable timber. Trees marked for cutting would be girdled and left standing, or would be felled and left on the forest floor. Girdled trees would provide a small-diameter snag component in the short term before falling over and becoming coarse woody material.

As previously noted, an increased risk of bark beetle infestation and stand damage has been identified at a point where three or more trees greater than 12 inches in diameter are killed per acre in a single year (Goheen. 1996). The number of trees which would require cutting to meet the proposed density management objectives would greatly exceed three trees per acre.

Bark beetles are already present in the areas infected with black stain in Section 9. Felled or girdled trees would provide prime brood habitat for bark beetles, increasing the risk of infestation and potential loss of the entire stand. Subsequent generations of bark beetles could move into adjacent standing green trees, attacking and killing them. The treatments would also contribute to the infestation potential since felled or girdled trees partially or fully shaded would provide better microclimate conditions for brood production than would occur in full sunlight.

If girdled or felled trees were left on the forest floor in the variable spacing treatment, fuel loading would be increased by as much as 15 tons/acre. Approximately 10 tons/acre of this material would be less than 3 inches in diameter, which provides the ignition potential and greatest influence on the rate of fire spread, in the event of an ignition. Fine fuels would represent a short-term increase in the risk of ignition, lasting one to three years after the treatment. The remaining 5 tons/acre would be material greater than 3 inches in diameter. This size of material is primarily responsible for the intensity and duration of a fire. The increased potential for high fire intensity represented by the larger fuels would persist for 15 to 20 years. Creation of such an increased risk of fire would not be consistent with stated LSRA objectives.

### B. Staggered Cutting

Another alternative considered was the staggered cutting of trees requiring removal, in order to achieve the desired stand densities. A portion of the trees would be felled or girdled each year, until the desired stand density was achieved. The potential of bark beetles infestation would be reduced if no more than three trees per acre in the12-to-20 inch diameter range were cut each year. The first treatment would treat the trees less than 12 inches in diameter in the same way as the proposed action and would likely need to be applied around hardwoods in order to maintain their presence in the stand. Subsequent treatments would treat 12 to 20 inch diameter conifers only. Organon Modeling predicts

that more than 60 trees per acre, greater than 12 inches in diameter, would need to be removed in Section 9. If only three trees per acre per year were cut in this size class, it would take approximately 20 years to achieve the desired stand density. At 80 years of age, relative density, trees per acre, and overstory conditions would be similar to the conditions that would be achieved by the proposed action. The differences would be in the vertical development of the stand. Staggered cutting would maintain a relative stand density of about 0.50 throughout the duration of the estimated 20-year treatment period. Stand density is a measure of site occupancy based on tree size and numbers of trees per acre. For a given average stand diameter, there is a maximum number of trees per acre that can exist on the site, or in another perspective, for a given number of trees per acre there is a maximum average size that these trees can reach. This value varies by species and has been given the term maximum stand density index. Relative density compares the current density of a stand with the theoretical maximum. Relative density indicates whether the stand is growing well, is in need of thinning, can support an understory, or is experiencing mortality suppression. A relative density of approximately 0.50 would not allow sufficient light to reach the forest floor for establishment and growth of an understory. After an initial decrease in canopy closure, tree crowns would fill the openings, returning closure to near 100 percent, where it would remain until a subsequent disturbance. Residual trees would be released slowly and crowns would continue to recede. This option was eliminated from consideration because the LSR objective of a multi-level canopy would not be achieved.

## IV. Resources That Would Remain Unaffected by Either Alternative

The following resources would not be affected by either of the alternatives, because they are absent from the area: Areas of Critical Environmental Concern (ACEC); prime or unique farmlands; floodplains; and Wild and Scenic Rivers. No Native American religious concerns, environmental justice issues, cultural resources, or solid or hazardous waste concerns were identified. No effect on the introduction or rate of spread of noxious weeds is expected, and is discussed in text.

# Chapter 3
# AFFECTED ENVIRONMENT

This chapter summarizes the specific resources that are present or have the potential to be present within the project area, and that could be affected by the proposed action.

## I. Vegetation/Habitat

Approximately 307 acres of the stands in Section 9, including the area proposed for treatment, were harvested by clearcutting between April 1950 and June 1952. All of Section 27 was harvested by clearcutting between 1945 and 1949.

Following the initial harvest entry in the mid-1940s, residual old-growth trees were left scattered throughout Section 27, but were nearly all removed when the section was relogged between 1961 and 1963. A 52-year-old Douglas-fir stand has since replaced the harvested stand. The areas proposed for treatment are located between approximately 1,100 feet and 2,200 feet. Approximately 33 acres were pre-commercially thinned to a density of 300 trees per acre in 1979, and portions of the area were treated with herbicides to eliminate hardwoods. This treatment was effective on Pacific madrone but generally ineffective on chinkapin. The area was later fertilized in 1985. The purpose of such treatments was to optimize coniferous wood production from these lands. These treatments created a nearly uniform stand with a marked reduction in the diversity and spatial distribution of vegetation. At present, canopy closure is approaching 100 percent resulting in the remaining hardwoods being overtopped by conifers and dying out of the stands as a consequence of suppression. Hardwoods presently account for only 7 percent of the total stand basal area. Suppression mortality is also occurring in conifers as a result of high stem densities. The average tree diameter in the stand is about 9 inches. The amount of coarse woody material is estimated at 2 percent cover based on down-log transects.

The portion of Section 9 proposed for treatment is a relatively uniform and even-aged 45-year-old Douglas-fir stand ranging in elevation from 2,400 feet to 2,900 feet, which was pre-commercially thinned to a density of 250-300 trees per acre in 1972 and fertilized in 1973. Canopy closure is nearly 100 percent and the average tree diameter is about 12 inches. The few remaining hardwoods comprise only 2 percent of stand basal area and are being overtopped and suppressed by conifers. Based on down-log transects, the amount of coarse woody material is estimated at 5 percent cover. Scattered Douglas-fir trees in the southern third of the stand are infected with *Leptographium wageneri*, the fungus responsible for black stain root disease. Infected trees exhibit various stages of decline, including yellowing of needles (chlorosis), loss of needles, and loss of growth. The infection has also resulted in the death of trees and creation of small openings within the stand that are generally less than 0.10 acres in size. Black stain also weakens trees, predisposing them to attack by bark beetles, as has occurred in this stand.

**Figure 1** Pre-commercially thinned portion of treatment area in Section 27

**Figure 2** Section 9. Suppression mortality of hardwoods.

Stand exams were conducted in the portions of Section 27 proposed for density management, to determine current stand conditions. Remeasurement data from fertilization study plots was used to quantify current stand conditions in Section 9, using the Organon growth model to characterize the stands and project changes in stand composition that would be expected to occur over time. The 1989 fertilization study plot measurement data was grown for ten years with Organon modeling to derive an estimate of the current conditions, displayed in Table 3, for the portion of the proposed project located in Section 9.

**Table 3 - Summary of Current Stand Conditions**

| | Section 9 | Section 27 |
|---|---|---|
| Total Age | 45 | 52 |
| Trees per acre - Conifer | 203.9 | 417.5 |
| Trees per acre - Hardwood | 23.4 | 90.0 |
| Basal Area - Conifer | 173.9 sq. ft. | 206.0 sq. ft. |
| Basal Area - Hardwood | 3.7 sq. ft. | 15.5 sq. ft. |
| Quadratic Mean Diameter (inches) | 12.0" | 8.9" |
| Organon Relative Density | 0.57 | 0.80 |
| Approximate Crown Closure | 100% | 100% |

At a relative stand density of 0.62, competition among trees results in suppression mortality. Stand densities are presently near or above a relative density level of 0.60. Canopies are closed with little ground cover and little opportunity for development of a shrub layer or understory regeneration.

As a result of past harvest, there are few if any residual larger trees or snags within the stands. The snags that are present are generally less than 10 inches DBH, resulting from suppression mortality in Section 27 or blackstain root rot infection in Section 9. Present levels of down wood are below the LSRA objective of 8 percent ground cover and primarily composed of large, older wood in softer decay classes, and small wood in harder decay classes.

## II. Special Status, Special Attention, and Riparian Associated Species

Special Status Species are those species that are: listed as threatened or endangered under the Endangered Species Act of 1973, as amended; candidates or proposed for listing under the Endangered Species Act; designated as Bureau Sensitive; or designated as Bureau Assessment . Bureau Sensitive species are those species that are eligible for federal or state listing or candidate status as designated under BLM 6840 policy. Bureau Assessment species are designated under

Oregon/Washington BLM 6840 policy and are not presently eligible for listing or candidate status under the Endangered Species Act. These species are, however, of State concern and may require protection or mitigation in application of BLM management activities.

Special Attention species are those species designated for protection under Survey and Manage and/or Protection Buffer standards and guidelines in the Northwest Forest Plan as amended by the *Record of Decision and Standards and Guidelines for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines in Forest Service and Bureau of Land Management Planning Documents Within the Range of th Northern Spotted Owl,* and incorporated into the Roseburg District ROD/RMP. These are not considered special status species, unless also designated under a special status category.

### ***A. Terrestrial Wildlife***

#### *1. Federally Threatened or Endangered*

The following species inhabit lands managed by the Roseburg District: the Federally-endangered Columbian White-tailed deer (*Odocoileus virginianus leucurus*), the Federally-threatened marbled murrelet (*Brachyramphus marmoratum*), the Federally-threatened northern spotted owl (*Strix occidentalis caurina*), and the Federally-threatened bald eagle (*Haliaeetus leucocephalus*).

Suitable habitat for the bald eagle is not present, and the project area is located 25-30 miles east of the Marbled Murrelet Management Zone. These species are not expected to inhabit the project areas, no consequences would be anticipated, and no further discussion of these species is required in this analysis.

Suitable habitat for the Columbian White-tailed deer is absent from the project area. The U.S. Fish and Wildlife Service has proposed that the Douglas County population be delisted. Final action on the proposed delisting is expected in the Spring of 2001.

The Federally-threatened Canada Lynx (*Lynx canadensis*), Federally-endangered Fender's blue butterfly (*Icaricia icarioides fenderi*) and the Federally-threatened vernal pool fairy shrimp (*Branchinecta lynchi)* have not been documented on the Roseburg District. Suitable habitat, forage and/or prey for these species are not available in the project area. As a consequence, these species are not expected to be present, no impacts would be anticipated, and there will be no further discussion of them in this analysis.

The Federally-threatened northern spotted owl is present within the proposed project area. An abandoned activity center (Slimer) is located in Section 27. The median home ranges of two spotted owl pairs overlap the portion of the project area located in Section 27. The median home ranges of five additional spotted owl pairs overlap the portion of the project located in Section 9. Suitable habitat on BLM-managed lands within the median home range of five of the owl pairs is less than 30 percent, and between 30 and 40 percent for the two remaining two pairs.

*2. Federal Proposed or Candidate*

There are no species proposed for listing, or candidates for listing, under the Endangered Species Act which have been documented or are expected to inhabit the proposed project area. No further discussion of impacts to proposed or candidate species is required.

*3. Bureau Sensitive*

A total of 53 species listed as Bureau Sensitive have been identified as species which may occur on the Roseburg District, of which 36 are documented. The following species having the greatest likelihood of occurrence:

The proposed project area is within 25 miles of known populations of Del Norte salamanders (*Plethodon elongatus*). Suitable habitat is characterized by rock-on-rock, talus material in association with riparian areas and/or old-growth timber overstory. Other Bureau Sensitive amphibians that may be present are the northern red-legged frog (*Rana aurora aurora*) and the foothill yellow-legged frog (*Rana boylii*) which inhabit forested riparian habitats.

The Oregon megomphix snail (*Megomphix hemphilli*) is also designated as an SEIS Special Attention Species. The snail favors hardwood litter and forest canopy such as may occur in the proposed project areas. Surveys of the project area were conducted with negative results. In the absence of the species from the project area, it will receive no further discussion in this analysis.

Long-eared myotis (*Myotis evotis*) bats inhabit and forage in coniferous forests. Nesting and roosting habitat is frequently provided by larger, older timber with deeply furrowed and loose bark. These features are not present in the stands proposed for treatment so habitation is not expected, although bats may still use the stands for foraging.

*4. Bureau Assessment*

The only species considered to have the potential of inhabiting the proposed project area is the merlin (*Falco columbarius*). This species prefers mature forest stands adjacent to open areas for hunting and foraging. These habitat features are absent in the project area, so species presence is not expected, no effects on the species would be anticipated, and no further discussion is required in this analysis.

5. SEIS Special Attention Species

The red tree vole (*Arborimus longicaudus*) is an arboreal rodent that primarily inhabits Douglas-fir where it nests and feeds, though it has been known to feed on needles of western hemlock, Sitka spruce and true firs. Although the red tree vole is more typically associated with late-seral and old-growth forest, it has been documented in stands in the project area which are proposed for treatment.

## ***B. Fish***

The National Marine Fisheries Service Matrix of Pathways and Indicators (MPI) is used to describe the current conditions of the affected aquatic environment. Baseline conditions for the proposed project area were derived from the Shively-O'Shea subwatershed baseline. The matrices are contained in Appendix B.

Aquatic habitat inventories have been conducted by the Oregon Department of Fish and Wildlife (ODFW) on Beals Creek and Shively Creek. The overall aquatic habitat rating for Shively Creek was described as "Fair," and Beals Creek was described as "Poor" by the ODFW. The "Fair" rating is equivalent to an "At Risk" determination and "Poor" to a "Not Properly Functioning" determination in the National Marine Fisheries Service MPI (USDC 1996). Observations by BLM fisheries personnel, in conjunction with this information on drainage conditions were extrapolated to the watershed level. Habitat access characterized by physical barriers to fish passage is described as "not properly functioning." Habitat elements of substrate, large woody debris, pool frequency, pool quality, off-channel habitat and refugia are all identified as "at risk", and/or "not properly functioning."

Fish presence occurs within four streams in or near the project area. These streams include Beals Creek, an unnamed tributary to the South Umpqua River and Slimewater Creek in T. 30 S., R. 4 W., Section 27, and Shively Creek in T. 31 S., R. 4 W., Section 9. There is no documented fish presence within 0.25-0.75 miles downstream of any of the proposed units.

### *1. Federally Threatened or Endangered*

The Umpqua River cutthroat trout (*Oncorhynchus clarki clarki*) was listed by the National Marine Fisheries Service as an endangered species. On April 5, 1999, the National Marine Fisheries Service proposed delisting the species and removing critical habitat designation based on a determination that the species is not an Evolutionary Significant Unit. In a Federal Register notice on April 19, 2000 (Federal Register, Vol. 65, No. 76/ Wednesday, April 19, 2000/ Rules and Regulations, pp. 20915-18), the National Marine Fisheries Service formally announced the delisting. The U.S. Fish and Wildlife Service concurred with the decision in an announcement dated April 26, 2000 (Federal Register, Volume 65, No. 81/April 26, 2000/ Rules and Regulations). Because the Umpqua cutthroat trout is no longer considered an

endangered species, there will be no further discussion of the species in this analysis.
The National Marine Fisheries Service has listed the Oregon Coast coho salmon (*Oncorhynchus kisutch*) Evolutionary Significant Unit. It was designated as a threatened species (Federal Register, Vol. 63, No. 153/Monday, August 10, 1998/Rules and Regulations) and critical habitat has been designated. The species is present in both of the fifth-field watersheds in which the proposed action is located.

*2. Federal Proposed or Candidate*

The Oregon Coast steelhead (*Oncorhynchus mykiss*) was proposed for listing by the National Marine Fisheries Service as a threatened species under the Endangered Species Act (Federal Register, Vol. 63, No. 53/Thursday, March 19, 1998/Rules and Regulations) and is present in both of the fifth-field watersheds in which the proposed action is located.

*3. Bureau Sensitive*

The Pacific lamprey (*Lampetra tridentata)* and Umpqua chub (*Oregonichthys kalawatseti*) are both on the U.S. Fish and Wildlife Service list of Species of Concern and are listed as Bureau Sensitive species by the BLM. Both species have been documented by the Oregon Department of Fish and Wildlife in the main stem of the South Umpqua River, but neither species is present in areas adjacent to the proposed action. No direct consequences to these species are anticipated and they will not be discussed further in this analysis.

## ***C. Plants***

*1. Federal Threatened or Endangered*

No species currently listed as threatened or endangered have been identified as likely or expected inhabitants of the project area based on current habitat conditions.

*2. Federal Proposed or Candidate*

Based on current habitat conditions, wayside aster (*Aster vialis*) and clustered lady's slipper (*Cypripedium fasciculatum*) may occur in the project area.

*3. SEIS Special Attention Species*

The following vascular and non-vascular plant species may occur within the project area.

| **Vascular Plants** | **Lichens** |
|---|---|
| *Cypripedium montanum* | *Hypogymnia duplicata* |
| | *Lobaria linita* |
| | *Pseudocyphellaria rainierensis* |

**Bryophytes**

*Diplophyllum plicatum*
Kurzia makinoana
Marsupella emarginata aquatica
Rhizomnium nudum
Tetraphis geniculata
Tritomaria exsectiformis
Buxbaumia viridis

**Fungi**

Aleuria rhenana
Bondarzewia montana
Otidea leporina
Otidea onotica
Otidea smithii
Polyozellus multiplex

**D. Riparian Associated Species**

Several species of terrestrial mollusks are suspected to be present within the project area, in association with Riparian Reserves. These species include *Ancotrema sportella*, *Haplotrema vancouverense*, *Prophysaon andersoni*, *Vertigo columbiana*, and *Ariolimax columbianus*. At least one species of aquatic snail (*Juga juga*) and four species of salamanders (Dunn's, Pacific giant, clouded, and the rough-skinned newt) may also be present within the project area. In addition, many species of migratory songbirds, waterfowl, raptors, mammals and reptiles are also known to use riparian areas as primary or secondary habitat, though their distribution and abundance are not well documented.

## III. Water Resources

The proposed project area is located within the Beals Creek, Bland Mountain, Upper Shively Creek and Lower Shively Creek drainages located in the Shively-O'Shea Subwatershed. Individual streams within the project area include Beals Creek, Slimewater Creek, Shively Creek, and an unnamed tributary of the South Umpqua River. Three of these streams are listed as water quality limited by the Oregon Department of Environmental Quality, under Section 303(d) of the Clean Water Act (ODEQ. 1998). Beals Creek and Shively Creek are both listed as water quality limited because of habitat modification, specifically an inadequacy of large woody debris in the stream channels. The South Umpqua River is listed, where it flows through the watershed, as water quality limited for conditions of elevated water temperature based on a lack of shading, elevated sediment levels from agricultural run off, pH, and flow modification from agricultural withdrawals. Streams immediately within the proposed project area are small in size and intermittent in nature. None of these streams are identified in the 1998 Water Quality Limited Streams 303(d) List.

A description of current watershed conditions (pp. 12-19) and recommendations for management action (p. 41) are contained in the Stouts/Poole/Shively-O'Shea Watershed Analysis. In conjunction with observation by BLM personnel, water quality parameters of temperature and sediment, and channel dynamics and condition were identified as "at risk" to "not properly functioning." Flow/hydrology criteria for peak/base flows, and drainage network were considered to be "not properly functioning." General watershed conditions were considered to be "not properly functioning" based on road density and location, disturbance history, and the condition of Riparian Reserves. Road density within the Shively-O'Shea subwatershed is 4.47 miles/mile$^2$ with an average of 4.25 stream

crossings per square mile and one crossing per mile of stream. At present, only 37 percent of Riparian Reserves within the subwatershed are characterized as mature or late-successional forest.

Management activities such as road construction and timber harvest in the Transient Snow Zone have been identified as factors having a probable influence on peak and base flows. Approximately 110 acres proposed for treatment are located within the Transient Snow Zone, between 2,000 feet and 5,000 feet in elevation above sea level. Forested lands are considered hydrologically recovered where forest stands have an average tree diameter of 8 inches or greater, and a minimum of 70 percent crown closure. Approximately 75 acres are in the Upper Shively Creek drainage, 17 acres of the Lower Shively Creek drainage, and 18 acres in the Bland Mountain drainage. At present, hydrologic recovery for all lands located within the Transient Snow Zone, irrespective of ownership, ranges from 88 percent to 99 percent for drainages in the project area.

## IV. Soils

Soils in the project area originated from metamorphosed sedimentary rocks. Soils are moderately deep (20 to 40 inches over bedrock) to deep (40 to 60 inches) over bedrock. The moderately deep soils are located primarily on ridges and shoulders, with the deeper soils characteristically occurring on the sideslopes and in the drainages. Textures are predominately loamy with 5-to-50 percent gravel sized rock fragments. On slopes greater than 60 percent, colluvial rock fragment content can range as high as 75 percent.

There are generally no slope stability concerns associated with these soils. The soils are not considered highly erosive, but when compacted may become subject to rilling and sheet erosion caused by surface water flow.

Some of the draws on northern aspects exhibit poor drainage and high water tables. There are three compacted skid trails from previous harvest entries located in the southeast quarter of Section 27 that have reduced, and are continuing to limit, site productivity.

## V. Noxious Weeds

Noxious weeds are prevalent, and are spreading throughout the Roseburg District. Exact figures are not available, but the BLM Oregon State Office reported that the acreage of noxious weeds infestation nationwide increased at an estimated rate of 14 percent a year between 1985 and 1991. This would be equivalent to an annual increase of at least 1,000 acres on the Roseburg District as described on page 7 of the *Roseburg District Integrated Weed Control Plan and Environmental Assessment* (USDI. 1995).

The Oregon Department of Agriculture (ODA) has developed a rating system for noxious weeds comparable to that in BLM Manual 9015 - Integrated Weed Management. The ODA Noxious Weed Rating System designates weeds as types “A,” “B,” and “T,” corresponding to types “A,” “B,” and “C” as described in BLM Manual 9015. Species may be classed in multiple categories.

Type “A” weeds are of known economic importance which occur in the State in small enough infestations to make eradication or containment possible; or is not known to occur, but its presence in neighboring states make future occurrence in Oregon seem imminent.

Type “B” weeds are of economic importance which are regionally abundant, but which may have limited distribution in some counties. Where implementation of a fully-integrated statewide management plan is infeasible, biological control will be the main control approach.

Types “T” are noxious weeds designated by the State Weed Board as target weed species on which the ODA will implement a statewide management plan.

Examples of noxious weeds suspected or previously documented in the South Umpqua River fifth-field analytical watershed include but are not limited to:

| **“A” Noxious Weed** | **“B” Noxious Weeds** | **“T” Noxious Weeds** |
|---|---|---|
| Woolly distaff thistle | Bull thistle | Yellow starthistle |
| Purple starthistle | Canada thistle | Woolly distaff thistle |
| | Rush skeletonweed | Rush skeletonweed |
| | Scotch broom | |

## VI. Cultural Resources

The proposed project area has been inventoried in site-specific surveys and no known cultural resources exist. Section 106 responsibilities of the National Historic Preservation Act have been completed in accordance with the 1998 Oregon State Historical Preservation Office protocols. In the absence of any cultural resources, no consequences are anticipated and there will be no further discussion of cultural resources in this analysis.

## VII. Hazard Reduction, Air Quality and Rural Interface Management

Before the advent of intensive fire suppression, fires tended to occur at a greater frequency and were generally of lower intensity. Fire suppression and other management activities have altered natural stand structure and fuel continuity. Fires now tend to occur infrequently and be greater in intensity. Although the fire behavior fuel models used to predict fire behavior in these stands indicate most fires would be slow spreading and of low intensity, these are surface fire estimates. The ladder fuels present in the form of dead limbwood and high numbers of suppressed understory trees provide vertical fuel continuity from ground-level to tree crowns, increasing the risk that a surface fire could become a crown fire. Closed canopy conditions could also provide horizontal continuity, increasing the risk that a crown fire could be sustained over longer distances and result in larger stand replacing events. Intensively managed second-growth stands are at greater risk of a high intensity, stand replacement fire than would exist in a natural stand where periodic fire would have removed ladder fuels, created a more open stand structure, and created discontinuous fuels characterized by a mosaic of different aged stands.

Under current fuel conditions, most fires would be limited to slow spreading surface fires with low flame lengths. Fire intensity would generally be low because surface fuels are light. Occasional jackpots of heavier surface fuels would cause flare-ups. Only under severe weather conditions such as extreme temperature, low humidity, and high winds would these fuels represent a fire hazard. Where greater quantities of dead and down fuels exist, fires would burn with greater intensity and could result in an increased occurrence of torching of individual trees. Crown scorch and tree mortality estimates for a 12-inch diameter Douglas-fir with 40 percent live crown indicate that most trees of this size class would survive a surface fire. Using assumptions of 40 percent slope and 0 miles per hour mid-flame windspeed, estimated fire growth after two hours would be less than 2 acres.

The project area is approximately 20 miles south-southeast from Roseburg which is a Designated Area (DA) under the Oregon Smoke Management Plan.

R-5 lands are private lands zoned for 1-5 acre residential lots (ROD/RMP, p. 54). There are no R-5 zoned lands within a ¼ mile of any of the units proposed for treatments, as a consequence there are no Rural Interface Management requirements, and it will not be discussed any further in this analysis.

# Chapter 4
# ENVIRONMENTAL CONSEQUENCES

This chapter discusses the specific resources that would or would not be affected in the short term and long term, by implementation of the alternatives contained in this analysis. The discussion also identifies the potential impacts or consequences that would be expected.

## I. Alternative 1 - No Action

### A. Vegetation/Habitat

Under a no action alternative, the subject stands would continue to develop as even-aged, single-storied conifer stands until some future disturbance alters the present stand structure and developmental trajectory. Over time, if protected from natural disturbances such as fire, they would lack many of the characteristics associated with old-growth forests. Canopy gaps and multiple-layered canopies would generally be absent. Table 4 summarizes Organon modeling projections of the expected stand conditions at an age of 160 years, assuming no intervening disturbances.

**Table 4 Summary of Untreated Stand Conditions at Age 160**

| | Section 9 | Section 27 |
|---|---|---|
| Total Age | 160 | 162 |
| Trees per acre - Conifer | 85.8 | 85.4 |
| Trees per acre - Hardwood | 0.8 | 18.3 |
| Basal Area - Conifer | 352.2 sq. ft. | 329.3 sq. ft. |
| Basal Area - Hardwood | 0.5 sq. ft. | 9.4 sq. ft. |
| Quadratic Mean Diameter | 27.3" | 24.5" |
| Organon Relative Density | 0.82 | 0.82 |
| Mean Crown Ratio | 0.22 | 0.22 |
| Approximate Crown Closure | 88% | 92% |

Species diversity would decrease as the stand ages. At present, Douglas-fir constitutes 85 percent of the stand basal area in Section 27, which would increase to 93 percent by age 160 years. Douglas-fir already makes up 98 percent of the stand basal area in Section 9. Hardwoods are an important stand component in this vegetation zone. A desired future condition described in the LSRA is a hardwood component that comprises 25-to-35

percent of the total stand basal area. Without treatment, hardwoods would continue being overtopped and suppressed by conifers and would die out of the stands. Hardwoods would cease to exist as a measurable component of the stand in Section 9. The hardwood basal area would account for less than 3 percent of the total stand basal area in Section 27 at age 162 compared with the present level of 7 percent.

Mortality caused by black stain root disease would not persist as a problem in Section 9, because its occurrence generally decreases as stands age. In the interim, disease related mortality would continue to create small canopy gaps and add some limited level of structural diversity to the stand.

Live crown ratios of the overstory trees would recede to approximately 20 percent from the current levels of 33-to-50 percent. Receding crown ratios would result in reduced tree vigor. This would diminish the ability of trees to put on additional growth in height and diameter when released from competing trees, and to adapt to and survive natural disturbances and environmental stresses that include fire, insects, disease and drought.

The development of snags and down wood would continue through the process of suppression mortality, but most of the mortality would be limited to smaller diameter classes. At approximately 85 years of age, Organon modeling projects an average of two snags per acre greater than 17 inches in diameter, which would eventually fall and fulfill the objective of two pieces of down wood per acre greater than 17 inches in diameter. The numerical objectives for down wood and snags would be met, but the material would be in smaller diameter classes than desired and would not persist in the stands over the long term.

Trees of sufficient size to provide large down wood and snags would not be present until the stands reach a point where suppression mortality is occurring in trees greater than 20 inches in diameter. Organon modeling projects that suppression mortality in trees 20 inches or greater in diameter would not occur in either Section 9 or 27 until the stands reach an age of at least 110 years.

At approximately 150 years of age the stands in both Sections 9 and 27 would be expected to meet LSRA objectives for numbers of large trees, but the overall diameter distribution of the stands would not meet the desired future conditions, as illustrated by Figure 3. Continued conditions of closed canopy would not allow the establishment of an understory and development of multilayered canopies occupied by the smaller diameter trees, as occurs in old-growth stands. This type of stand uniformity would result in reduced structural diversity within the stands and limited habitat suitability for all species dependent on the diversity of late-successional forest habitat.

The no action alternative would not lead to the attainment of the Desired Future Conditions by Vegetation Zone found in Table 8, on page 50 of the LSR Assessment, nor would it meet the landscape objectives of maintaining or enhancing connectivity across the landscape. Diversity within plant communities would continue to decrease resulting in a reduced quality of wildlife habitat. Loss of hardwoods and shrubs would reduce forage for many prey species important to the northern spotted owl, such as the dusky-footed woodrat, which can account for more than 35 percent of an owl's diet.

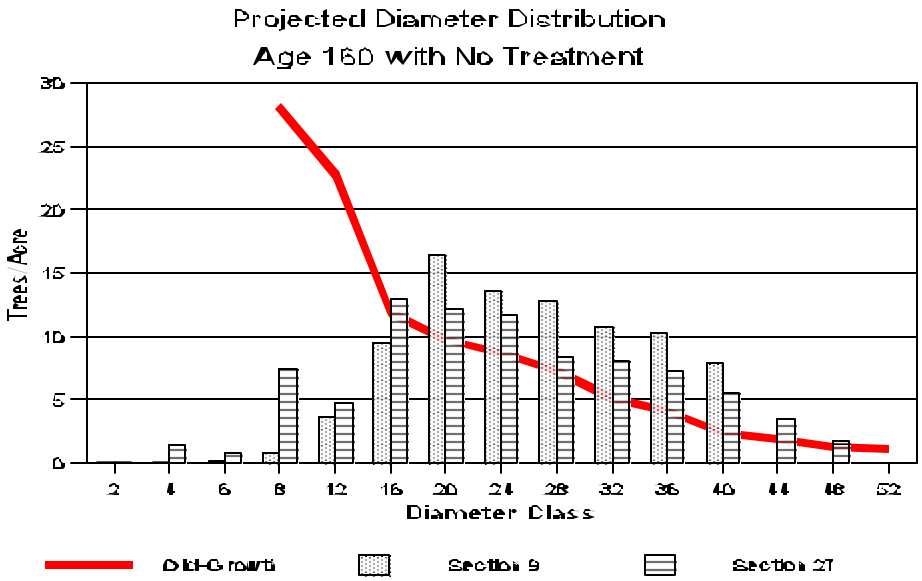



**Figure 3** Diameter Distribution of Both Stands at Age 160

## B. Special Status, SEIS Special Attention and Riparian Associated Species

### *1. Terrestrial Wildlife*

*Federal Threatened or Endangered Species*

Northern Spotted Owl

Both Sections 9 and 27 currently provide dispersal and foraging habitat for the northern spotted owl. In the Klamath Province, suitable spotted owl habitat is composed of a mixture of tree species and sizes, irregularly distributed across the landscape as a consequence of past disturbances. In the absence of disturbance to current stand conditions, the existing stand conditions are projected to change slowly with a resulting loss in habitat structure and diversity. Many of the habitat

features that are characteristic of old-growth stands would be deficient or absent. These habitat features include large down logs greater than 40 inches in diameter, large trees greater than 40 inches in diameter, a component of hardwoods within the stands, multilayered canopies with gaps, large snags, and spatial diversity.

Under a no action alternative, and in the absence of any natural disturbance the stands would still not develop by 160 years of age the tree diameter distribution characteristic of late-successional forests, as compared to attainment at 120 years of age anticipated with implementation of the proposed alternative. (See Tables 6 and 7). As a consequence, it would be expected that the components identified above would decline in numbers and quality, or be lost altogether resulting in a reduction in overall habitat quality for nesting, roosting, and foraging.

Present levels of habitat connectivity and forage conditions within the stands would be maintained in the near term, but would be expected to decline in the long term. Likewise, overall habitat conditions within this LSR would be maintained by the no-action alternative in the near term but would not be enhanced and would be expected to decline in the long term.

*Bureau Sensitive and Bureau Assessment Species*

The consequences of no action would not be expected to have any direct short-term effects on Bureau Sensitive species identified as potentially utilizing coniferous forest habitat of the type that exists in the project area. The stands would continue to provide usable habitat. However, in the long term these stands would not develop the diversity of habitat characteristics and the associated diversity of plant and animal communities which would be expected to evolve as a consequence of disturbance. The suitability of this habitat for these species would decline, for reasons comparable to those described above in the discussion of the northern spotted owl.

*SEIS Special Attention Species*

Red Tree Vole

Current stand conditions support red tree voles, with closed canopies providing cover and dispersal paths. Although the species is thought to favor old-growth forest conditions, an alternative of no action would not have any direct impact on the species.

## ***2. Fish***

The no action alternative would not have any direct effect on listed and candidate fish species. Indirect and cumulative impacts associated with currently deficient watershed conditions for physical barriers, large wood, pool frequency and quality, off-channel habitat and refugia would continue to limit aquatic conditions and habitat important to at-risk fish populations.

Recruitment of large wood into Riparian Reserves would be delayed. Current suppression mortality supplies primarily small diameter material which would not persist over time. The lack of larger diameter material would limit the availability and quality of stream structure that provides habitat for aquatic organisms. The recruitment patterns for large woody debris and the diversity of in-stream structure, including pools, would be greatly simplified and inconsistent with in-stream structure characteristic of old-growth forest and habitat conditions. This condition would likely persist for an extended period of time, possibly more than a century.

There would be no removal of any physical barriers that presently restrict migration of aquatic organisms, because there would be no stream crossing removal that commonly occurs with road decommissioning.

There would be no improvement in off-channel habitat and refugia in the short term. In the long term, as the stands mature they may begin to develop some late-successional characteristics usable to species dependent on the habitat that it provides. The usefulness of these stands would be less than occurs in stands that have developed through disturbances, because stagnated growth would still result in primarily single-layer, closed-canopy stands devoid of an understory and intermediate canopy layers.

### ***3. Plants***

There would be no direct impacts to any vascular or non-vascular plants identified as either Special Status or SEIS Special Attention species as a consequence of a no action alternative, because the alternative would not disturb or modify presently available habitat for the species. Long-term indirect impacts would be expected as a result of natural processes of plant community succession and the changes in habitat conditions that occur in association with those processes.

### ***4. Riparian Associated Species***

No direct impacts to any species using riparian areas as primary or secondary habitat would be expected as a consequence of no action. Habitat components utilized by these species would remain intact and available at current levels in the short term. In the long term, stands would mature without the development of structural characteristics typical of late-successional forest and habitat. While these stands would provide usable habitat for some species, the simplification of stand structure would not provide the full range of habitat niches typically present, and subsequently, would not support the full range of species normally found in late-successional forests.

## C. Water Resources

Sediment problems affecting water quality would persist. There would be no correction of improper road drainage or removal of failing stream crossings that are presently contributing to the overall sediment load within the watershed. Erosional problems associated with Road No. 30-4-27.0 would remain uncorrected resulting in further loss of the fill slope presently slipping away below the road.

Water temperature problems would remain unaffected. Channel conditions and dynamics would remain unchanged. Indirect affects to stream channels associated with a lack of large wood as structure for stabilization of channels and stream banks would continue to degrade channel condition and function.

No road construction or timber harvest would occur which could potentially affect peak and base stream flows. In the long term, the watershed would recover as previously harvested and disturbed stands grow and mature.

There would be no decommissioning of roads that would reduce road density and the drainage network (e.g. ditch lines, road surfaces) within the watershed.

## D. Soils

There would be no direct impacts to soil erosion rates or site productivity associated with a no action alternative. The cumulative effects of surface erosion associated with unsurfaced roads and their use during wet conditions would continue. Indirect impacts from the loss of site productivity associated with compaction from previous entries by ground-based equipment would be not corrected by sub-soiling to reduce bulk soil density.

## E. Noxious Weeds

The BLM has a strategic plan for dealing with Noxious Weeds addressed in the Roseburg District *Integrated Weed Control Plan and Environmental Assessment* (USDI. 1995).

This environmental assessment is tiered to the *Northwest Area Noxious Weed Control Program Environmental Impact Statement* (USDI. 1985) and *The Supplemental Record of Decision for the Northwest Area Noxious Weed Control Program* (USDI. 1987).

Implementation of the *Integrated Weed Control Plan* by the District would continue in an effort to prevent or reduce rates of spread of weed populations. There would be no anticipated increases or decreases in the size and extent of noxious weed populations.

### F. Hazard Reduction and Air Quality

There would be no hazard reduction applied to the mid-seral stands in the project area. No hand-piling and burning of activity fuels (slash) would be required so there would be no impact on air quality. The current risk of fire occurrence and the potential consequences described in Chapter 3. VII. would persist. Additional fuel loading resulting from suppression mortality would increase the availability of large fuels and would increase the risk of high fire intensity in the event of an ignition. Conditions of a closed canopy, intermingled crowns and the presence of ladder fuels would persist, and would continue to provide the opportunity for torching of individual trees or for sustained crown fire in the event of an ignition.

## II. Alternative 2 - Proposed Action

### A. Vegetation/Habitat

Old-growth stands appear to have developed under conditions of low tree density where little competition occurred between individual trees, and stands regenerated over time. It appears unlikely that old-growth stands once had the high tree densities that characterize today's managed stands, and that these stem densities were subsequently reduced by a disturbance which left only the larger trees. Research on old-growth stands indicates that the average tree diameter at age 50 years in naturally-occurring stands was much greater than is typically observed in young, managed stands with high tree densities. Rapid growth rates persisted well beyond age 50 years in these old stands (Tappeiner, et.al., 1997). The slower rates of growth in young, managed stands are the direct result of these higher tree densities. The types of disturbances sufficient to promote Douglas-fir regeneration in naturally occurring stands are generally absent in young, managed stands.

Relative density is used to describe stand stocking levels relative to a theoretical maximum. At an Organon relative density above 0.62, competition and suppression mortality occurs. Thinning for timber production traditionally maintains relative density between 0.40 and 0.60. Thinning to a relative density of 0.25 or less (0.28 for Organon) would promote understory development and vertical diversity. (Hayes. 1997)

A variable spacing treatment in Section 9 would reduce the relative density to 0.26 and provide conditions suitable for the establishment, growth and survival of an understory component. Because of a previous pre-commercial thinning treatment, the trees in this stand are larger in diameter with a healthy live crown ratio averaging 50 percent.

Following the proposed treatments, relative density in Section 27 would be higher than that of Section 9 because of a combination of factors. The stands presently have a much greater stand density than in Section 9, and the resulting competition has yielded a greater number of trees per acre with smaller diameters. This has resulted in shorter live crown lengths which average about 33 percent, even though tree heights are comparable to those in Section 9. Despite this higher density, thinning on a variable spacing would still allow

an opportunity for release, an increase in tree vigor, additional development of live tree crowns, and increased tree growth. This would enhance the ability of the trees to respond to and survive natural disturbances and environmental stresses such as fire, insects, disease, and drought. Some areas of the stand would be more open with a relative density much less than 0.40, while other areas would be characterized by clumps of trees and a higher relative density. This higher stand density would also reduce the likelihood of any major blowdown event that could result as a consequence of opening up the stand.

Table 5 summarizes the anticipated stand conditions and characteristics following treatment, and contrasts those conditions with the existing conditions. Figure 7 on page 30 provides a visual depiction of what the stand would look like following treatment.

**Table 5 Stand Summary Before and After Treatment**

| | Section 9 | | Section 27 | |
|---|---|---|---|---|
| | Existing Condition | After Treatment | Existing Condition | After Treatment |
| Total Age | 45 | 45 | 52 | 52 |
| Trees per acre - Conifer | 203.9 | 94.2 | 417.5 | 196.6 |
| Trees per acre - Hardwood | 23.4 | 23.4 | 90.0 | 44.4 |
| Basal Area - Conifer | 173.9 sq ft | 73.7 sq ft | 206.0 sq ft. | 96.8 sq ft |
| Basal Area - Hardwood | 3.7 sq ft. | 3.7 sq ft | 15.5 sq. ft. | 15.4 sq ft |
| Quadratic Mean Diameter | 12.0" | 11.0" | 8.9" | 9.2" |
| Organon Relative Density | 0.57 | 0.26 | 0.80 | 0.40 |
| Approximate Crown Closure | 100% | 45% | 100% | 50% |

Visual representations of the treatments and resultant densities can be seen in the following Stand Visualization Outputs. These were generated using diameter distributions derived from Organon modeling of the existing conditions and those anticipated following the variable spacing density management. Figures 4 and 6 approximate stand conditions in Sections 9 and 27 prior to proposed treatments. Figures 5 and 7 illustrate the anticipated vertical and horizontal stand structure immediately following the proposed density management treatments.

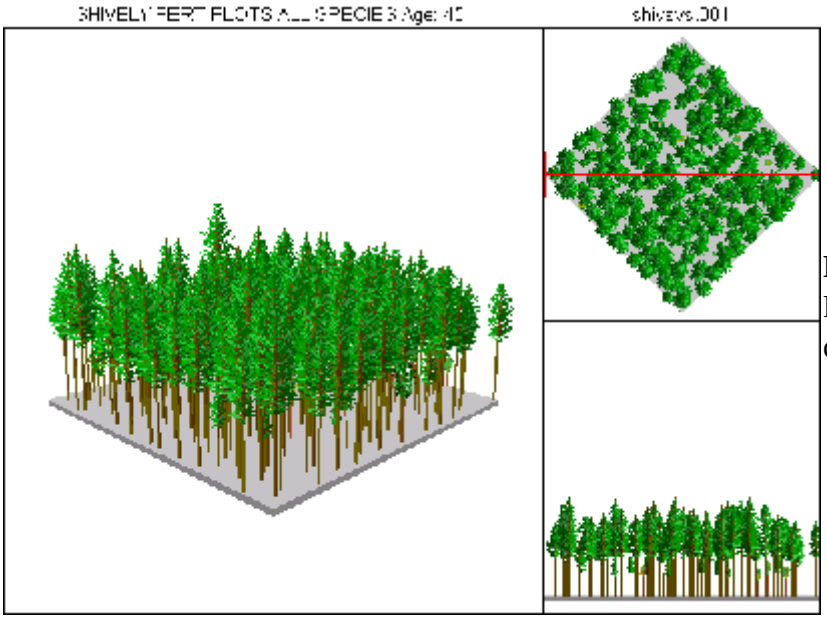


**Figure 4**
Representation of the existing condition in Section 9.

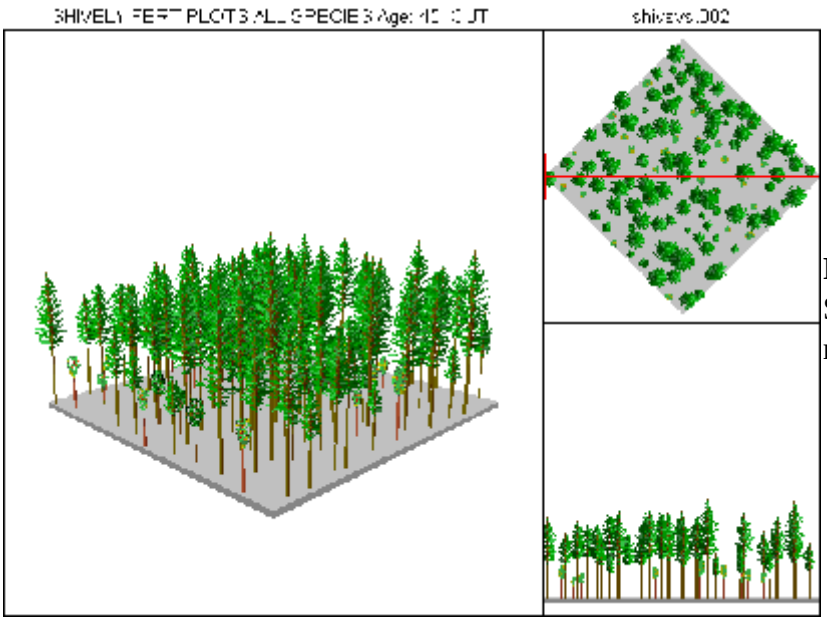


**Figure 5**
Section 9 following density management treatment.

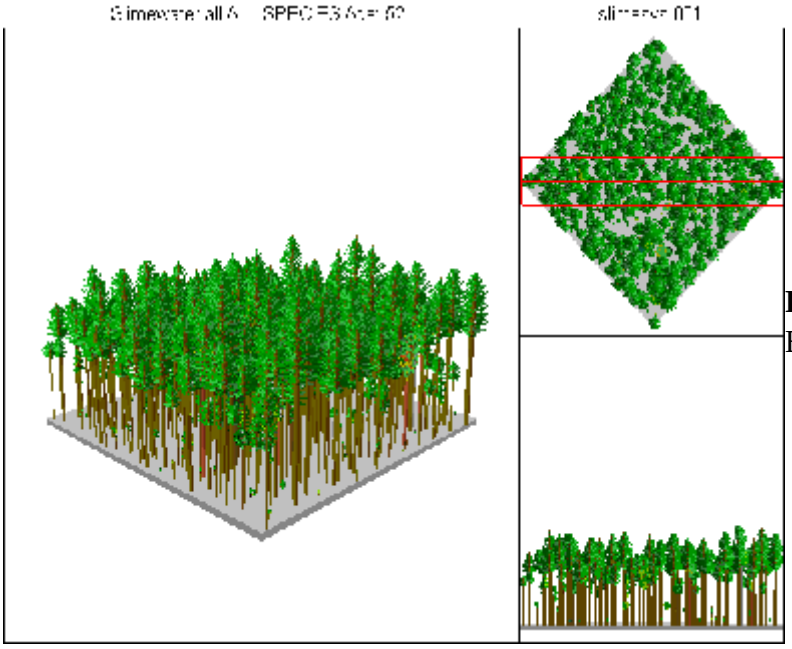


**Figure 6**
Existing condition in Section 27.

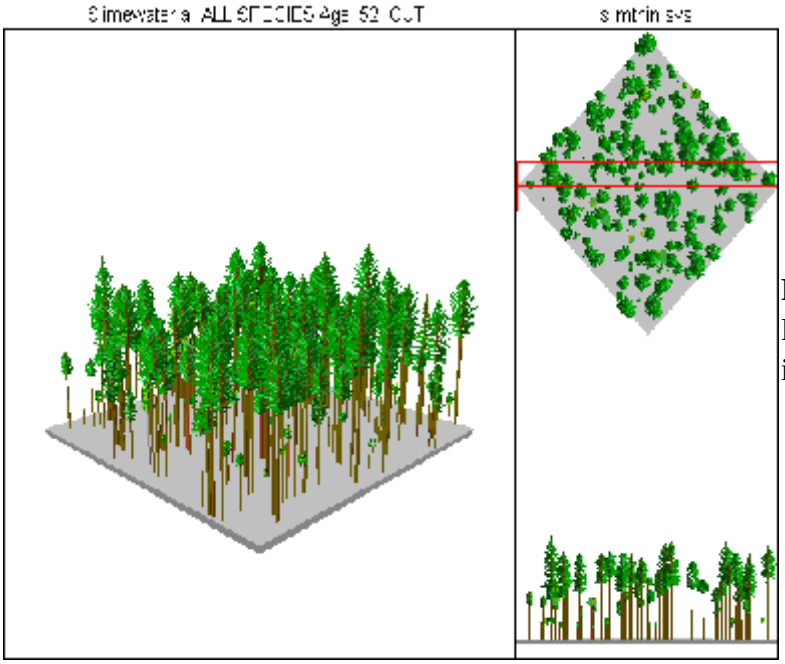


**Figure 7**
Following the variable spacing in Section 27.

The reduction in tree densities and competition following the proposed treatments would accelerate individual tree growth. This accelerated growth would shorten the period of time needed to attain the objective of 12 or more trees greater than 35 inches in diameter, identified as one of the Desired Future Conditions in the LSRA. Organon modeling represented in Table 6 illustrates how this objective can be achieved 30 years sooner for the stand in Section 9 by applying density management, compared to no action. Table 7 provides a comparable illustration of how treatments would accelerate attainment of the desired number of large trees by 20 years, in Section 27.

**Table 6 Comparison of Treated Stand and No Action**

| | **Section 9** | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Existing Cond. | After Treatment (* Includes underplant of 120 TPA) | | | | No Action | | |
| Total Age | 45 | 45 | 80 | 120 | 160 | 80 | 120 | 160 |
| Trees per acre - Conifer | 203.9 | 97.9 | 88 *177 | 77 *115 | 64 *88 | 167 | 118 | 86 |
| Trees per acre - Hardwood | 23.4 | 23.4 | 15.5 | 6.7 | 2.8 | 8.8 | 2.0 | 0.8 |
| Basal Area - Conifer (sq ft) | 173.9 | 74.4 | 208.8 | 291.1 | 320.4 | 308.6 | 350.0 | 352.2 |
| Basal Area - Hardwood (sq ft) | 3.7 | 3.7 | 6.2 | 4.3 | 2.4 | 2.6 | 0.9 | 0.5 |
| Quadratic Mean Diameter (inches) | 12.0 | 11.0 | 19.5 | 25.2 | 29.3 | 18.0 | 23.2 | 27.3 |
| Organon Relative Density | 0.57 | 0.26 | 0.65 | 0.76 | 0.77 | 0.85 | 0.87 | 0.82 |
| Crown Ratio | 54% | 52% | 46% | 37% | 33% | 32% | 25% | 22% |
| Approximate Crown Closure | 100% | 45% | 100% | 100% | 97% | 98% | 92% | 88% |
| Trees per Acre $ 35" dbh | - | - | - | 12 | 19 | - | 3 | 16 |

| Table 7 Comparison of Treated Stand and No Action | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Section 27 | | | | | | | |
| | Existing Cond. | After Treatment | | | | No Action | | |
| Total Age | 52 | 52 | 82 | 122 | 162 | 82 | 122 | 162 |
| Trees per acre - Conifer | 417.5 | 196.6 | 126.8 | 89.7 | 67.9 | 215.9 | 125.2 | 85.4 |
| Trees per acre - Hardwood | 90.0 | 44.4 | 26.7 | 15.8 | 11.3 | 49.7 | 27.7 | 18.3 |
| Basal Area - Conifer (sq ft) | 206.0 | 96.8 | 205.8 | 276.7 | 298.6 | 293.5 | 325.4 | 329.3 |
| Basal Area - Hardwood (sq ft) | 15.5 | 15.4 | 15.1 | 12.9 | 12.3 | 11.7 | 9.6 | 9.4 |
| Quadratic Mean Diameter | 8.9 | 9.2 | 16.2 | 22.4 | 26.8 | 14.5 | 20.0 | 24.5 |
| Organon Relative Density | 0.80 | 0.40 | 0.63 | 0.73 | 0.73 | 0.91 | 0.88 | 0.82 |
| Crown Ratio | 33% | 32% | 35% | 29% | 25% | 27% | 24% | 22% |
| Approximate Crown Closure | 100% | 50% | 100% | 100% | 95% | 100% | 95% | 92% |
| Trees per Acre $ 35" dbh | - | - | 3 | 12 | 17 | 1 | 8 | 16 |

Reduced stocking would allow more light to penetrate to the forest floor. The canopy gaps would allow for underplanting of conifer seedlings and understory establishment of shrubs, hardwoods, and conifer saplings that would develop into multiple canopy layers over time. The rationale for the retention of trees across all diameter classes would be the creation of stand conditions that would meet the overall diameter distribution of the desired future condition.

Spatial variation of treatments would result in an increase in stand diversity over the landscape that mimics the irregular timing and variable intensity of wildfires. This diversity would provide the variety of habitat components within a forest environment needed by late-successional dependent species of plants and wildlife.

The stands that would remain untreated already possess multiple-layer canopy development and contain hardwoods that are not being suppressed. These stands would maintain stand-level connectivity adjacent to and within the treatment areas. This would maintain thermal and visual cover, preserve some level of natural suppression and mortality, retain small trees, favor natural size-differentiation among trees, and leave areas of undisturbed coarse woody material. Figure 8 is representative of conditions that would exist in the untreated areas.

**Figure 8** Area that would remain untreated.

**Coarse Woody Material and Snags**

Density management would result in faster growth of residual trees which would provide for future recruitment of large woody debris and snags sooner, when compared to a no action alternative.

Within five years of the completion of the density management treatments, the desired levels of down wood and snags would need to be met. Since current levels of down wood are below the 8 percent coverage recommended in the LSRA, all existing down wood would be reserved. Additional coarse woody material and snags sufficient to meet LSRA requirements would be met in a variety of ways, including: trees breakage; trees felled but not removed; post-treatment blowdown; bark beetle kill; and by felling or girdling of reserved trees.

## B. Special Status, SEIS Special Attention and Riparian Associated Species

### *1. Terrestrial Wildlife*

*Federal Threatened or Endangered Species*

The only threatened or endangered species identified in the project area is the northern spotted owl. On average, suitable habitat for owl pairs within the seven median home ranges overlapping the project area is less than 30 percent. Opportunities for development of additional suitable nesting habitat exist only on Federal lands where timber production is not the sole management objective. Private lands would be expected to continue to provide some forage and dispersal habitat. Although natural disturbances will occur over time, management actions on both Federal and private lands would not allow such disturbances to occur at a landscape level. In the absence of landscape-level disturbance, the variety of vegetation and seral stages necessary for suitable habitat would remain low.

One objective of the proposed treatments is maintenance of existing use of the project area for foraging and dispersal. The proposed treatments would achieve a balance between maintenance of existing habitat functions and development of additional old-growth habitat features within the stands. The short-term impact of reduction in stand density on dispersal and foraging habitat for northern spotted owls would be offset by the retention of untreated areas interspersed among treated areas in order to maintain connectivity with adjoining stands. The proposed density management would shorten the period of time necessary for the development of additional suitable habitat conditions, and would result in an overall improvement in habitat quality for the northern spotted owl. Treated stands would meet the desired future condition at an estimated stand age of 120 years, at least 40 years sooner than would occur under an alternative of no action (See Tables 6 and 7). Habitat quality would also be improved compared to no action because of the maintenance of hardwoods, development and maintenance of multilayered canopies, spatial diversity and increased tree diameters and heights. Larger trees would provide for future recruitment of large snags, large down wood and nesting opportunities. Because the proposed actions are considered to have a negligible likelihood of affecting owls, a determination of "may affect, not likely to adversely affect" was made.

*Bureau Sensitive and Bureau Assessment Species*

Del Norte Salamander

Surveys have been conducted and did not identify the presence of suitable habitat, nor were any individuals of this species located. Based upon the lack of suitable habitat and the absence of individuals of the species, it would not be anticipated that the proposed action would have any effect on Del Norte salamanders.

Other Species

The presence of other species has not been documented in the project area. Any consequences from habitat disturbance are anticipated to be short-term. In the long term, it is anticipated that these species would benefit from habitat diversity and the development of late-successional forest habitat characteristics on which they depend.

*SEIS Special Attention Species*

In the short term, no impacts to populations of red tree voles would be expected as a consequence of the proposed action. Surveys have documented the presence of this species. Current management guidelines would be applied, which would protect habitat and microclimate conditions essential to the persistence of the species. (FSEIS. 1994) In the long term, the proposed action would benefit these species through the accelerated development of old-growth forest conditions thought to be favored by the red tree vole.

***2. Fish***

No direct impacts would be anticipated, because no fisheries resources are located in the actual project area. Indirect and cumulative impacts to fisheries resources associated with the proposed action would primarily result from the current baseline conditions described on page 16 of this document. No degradation of any of the environmental baseline factors and indicators is anticipated at the fifth-field watershed level, or at the six-field subwatershed level for the following reasons:

A. Physical barriers to fish passage would remain unaffected and unchanged by the proposed action because none of the proposed temporary road construction would cross any streams and require the placement of culverts that could block migration of fish or other aquatic organisms. Proposed road decommissioning would remove two stream crossings, but this is not anticipated to have any measurable effect because the crossings are located on intermittent stream courses.

B. Current levels of large woody debris in stream channels and within Riparian Reserves would be unaffected because all existing down material would be reserved under contract provisions. The mixed decay classes of large woody debris would provide a variety of habitat features and organic nutrients essential to the life cycles of many aquatic organisms. Trees greater than 20 inches in diameter within Riparian Reserves would be reserved from cutting to provide for recruitment of large woody debris in the short term. Accelerated growth of the remaining trees would provide large wood for future recruitment into streams.

C. There would be no affect on pool frequency and quality associated with the proposed density management, because: 1) most of the streams in the project area are intermittent in nature and do not retain pool habitat in the drier summer months, 2) large wood in channels that is primarily responsible for the creation of pools would be reserved and protected from disturbance, and 3) suitable pool habitat that supports resident and anadromous fish is located downstream of the project area. In the long term it is possible that large wood recruited into the intermittent streams would eventually migrate downstream where it would provide structure for the maintenance of existing pools and the creation of new pools that would provide rearing, feeding and holding habitat for fish.

D. Off-channel habitat and refugia would benefit from the proposed treatment, because the density management would accelerate the growth and development of large trees which would eventually provide snags and large wood within the Riparian Reserves. The treatment would also allow sufficient sunlight to penetrate the canopy, such that conifer regeneration and the establishment of understory communities of grasses forbes and shrubs would occur. As these understory components develop, and stratification of canopy layers occurs, the Riparian Reserves would attain the habitat characteristics associated with late-successional conditions and suited to riparian and old-growth dependent species.

*Federal Threatened or Endangered Species*

A Dichotomous Key for making Endangered Species Act (Appendix B, p. B-3) Determination of Effects was used in making the determination. While the key indicates that there may be a potential effect to fisheries resources, the anticipated impacts which were derived primarily from the National Marine Fisheries Service MPI have been addressed. Each anticipated impact was determined to have no measurable effect at the project level. No environmental indicators were degraded at the project level by the proposed density management. Documented limits of coho salmon presence are in excess of ¼ mile downstream of the project area and would be even less likely to be affected by the proposed activities. As a consequence, the level of effect to listed fish species downstream of the project areas was determined to constitute an extremely low or negligible probability of take and to constitute a "may affect, not likely to adversely affect" determination which requires informal conferencing with the National Marine Fisheries Service.

### ***3. Plants***

No special status plant species were located in surveys of the project area. In the absence of any special status plant species, no impacts would be anticipated.

No survey and manage species were identified in project area surveys, which require management of known sites.

***4. Riparian Associated Species***

There would be short-term impacts from density management that would disturb and modify current habitat conditions by reducing canopy cover to approximately 50 percent, causing localized soil disturbance, and disturbing coarse wood and understory vegetation. Canopy closure would be expected to return to a minimum of 70 percent within 10 years. In the long term, density management would promote the development of late-successional habitat characteristics beneficial to species dependent on late-successional riparian and aquatic habitat, when compared to the no action alternative which would not provide such long-term benefits.

## C. Water Resources

The proposed density management would have no measurable effect on water temperatures, because most of the streams in the project area are intermittent and do not contribute water in summer months that would affect stream temperatures. Where density management would be applied adjacent to perennial streams, the no-entry buffer and restriction of treatments to a light density reduction within 100 feet on sheltered northern and eastern aspects would retain shading sufficient to protect the streams from solar heating that could otherwise raise water temperatures.

The proposed density management would not affect the current sediment regime because a prohibition of yarding across streams, establishment of no-entry buffers, and directional felling would protect stream banks and channels. This would eliminate these areas as possible sources of soil disturbance and sediment inputs. Road renovation, temporary road construction, yarding operations, timber hauling, and road decommissioning activities would be restricted to the dry season to reduce the risk of sediment generation. Disturbed areas would be seeded and mulched so that bare soils would not be exposed to fall and winter rains, resulting in possible erosion and the transport of sediment.

The proposed treatment would not affect stream channel morphology and function, because of the protections described above. The protection identified would maintain channel conditions and dynamics by preventing disturbance or degradation of the physical structure. Reservation of large wood currently located in stream channels would also maintain structural stability and function.

The proposed project would not alter peak and base flows at the drainage, subwatershed or watershed scale, because the affected drainages would remain 86-to-99 percent hydrologically recovered following density management treatments, and the potential for changes in flow is manifested when hydrologic recovery falls below 70 percent. The proposed density management would be dispersed across four drainages, and would treat

less than one percent of the land area in the Shively-O'Shea subwatershed. As a consequence, changes to peak and base flow would be negligible.

Treatments would affect approximately 110 acres of land within the Transient Snow Zone that is presently hydrologically recovered by reducing canopy cover, but canopy closure would remain at a minimum average of 50 percent and would recover to greater than 70 percent within 10 years, following treatment. In applying the Hydrologic Recovery Procedure to determine the effects of the density management, approximately 36 percent of the affected ground within the units would remain hydrologically recovered.

Density management could affect flows by reducing the crown area that would intercept precipitation and allow evaporation, and by reducing the amount of live root material that would actively extract water from the soil. These two factors could result in higher soil water content, runoff, and possibly groundwater levels. These effects would be expected to increase as the percentage of stems and canopy removed increases. However, in response to the lower tree densities, remaining trees would grow more vigorously and increase uptake of water, so that when soil saturation has been reached, no measurable difference in runoff is expected between treated and untreated areas.

Proposed decommissioning of old jeep roads would reduce road densities within the affected drainages and removed roads and stream crossings located within Riparian Reserves. This would provide a measure of improvement in watershed conditions by reducing overall road density and removing roads from sensitive areas. It would also reduce the overall drainage network and restore the natural timing and delivery of flows to streams.

## D. Soils

Density management activities could result in localized soil compaction, surface erosion, and site productivity loss, but the levels are expected to be inconsequential and within acceptable levels anticipated in the PRMP/EIS.

Hand construction of waterbars across yarding corridors would divert surface flow and reduce surface erosion potential. Cable yarding would create less surface disturbance and compaction than ground-based yarding.

Tilling three existing skid trails identified in Section 27, landings and other highly-compacted areas with a self-drafting winged subsoiler would help restore site productivity lost as a consequence of previous management actions.

Restricting treatments adjacent to perennial streams to a light thinning, in conjunction with directional felling and yarding away from the streams would protect poorly drained soils from surface disturbance and maintain soil stability within these areas.

Correction of drainage problems on natural surface roads or decommissioning would reduce surface erosion and soil loss from road surfaces. Reciprocal right-of-way agreements and other access issues prevent decommissioning or closure of the 30-4-28.0 and 31-4-9.3 roads. Surfacing these roads with aggregate would minimize potential erosion from the road surfaces.

## E. Noxious Weeds

The BLM has a strategic plan for dealing with Noxious Weeds addressed in the *Roseburg District Integrated Weed Control Plan and Environmental Assessment* (USDI. 1995). This environmental assessment is tiered to the *Northwest Area Noxious Weed Control Program Environmental Impact Statement* (USDI. 1985) and *The Supplemental Record of Decision for the Northwest Area Noxious Weed Control Program* (USDI. 1987).

Implementation of the *Integrated Weed Control Plan* by the District would continue in an effort to prevent or reduce rates of spread of weed populations. Therefore, no increases or decreases in the size and extent of noxious weed populations are anticipated.

## F. Hazard Reduction and Air Quality

The proposed density management would contribute an estimated 15-to-18 tons per acre of activity generated fuels to the present natural fuel load. Approximately 10 tons per acre would be material less than 3 inches in diameter. These fine fuels would constitute an increased risk for ignition and are the sizes of material responsible for rate of fire spread.

The South Umpqua River/Galesville LSRA recommends the application of fuels treatments to reduce the risk of wildfires in the short-term and long term. Treatments aimed at the reduction of short-term risk are generally associated with fine fuels. These fuels are a short-term risk by the nature of the period of time over which they deteriorate, which is typically 3 to 15 years. Hand-piling and subsequent burning of the hand-piles would reduce the risk of fire in the LSR, by modifying fuel continuity and removing a major portion of the fine fuels under controlled circumstances. Piling and burning of fine fuels would also serve the purpose of creating spots to facilitate the underplanting proposed for many of the treatment units.

Impacts to air quality associated with pile burning would be minimal. All burning would be done in accordance with regulations contained in the Oregon Smoke Management Plan. Hand-pile burning during the fall or winter would have short term impacts to air quality limited to a few hours and within the immediate vicinity of the areas burned. Burning during rainy periods would have the effect of dispersing smoke, washing particulates from the air, and extinguishing the piles.

## III. Monitoring

Monitoring would be done in accordance with the ROD/RMP, Appendix I (p. 84, 190-192, & 194-199). Monitoring efforts would be targeted at the following resources: Riparian Reserves; Late-Successional Reserves; Air Quality; Water and Soils; Wildlife Habitat; Fish Habitat; and Special Status and SEIS Special Attention Species Habitat.

# Chapter 5
# AGENCIES/PERSONS CONTACTED, PREPARERS AND LITERATURE CITED

This project was included in the Roseburg BLM Project Planning Update (Winter 2000). A notice of decision would be published in the Roseburg *News-Review* if the decision is made to implement the project.

I. **Agencies & Persons Contacted:**

Adjacent Landowners
Registered Down-Stream Water Users
Cow Creek Band of Umpqua Indians
Dr. John Tappeiner, Ph.D., Oregon State University
Dr. Don Goheen, Ph.D., Southwest Oregon Forest Insect and Disease Technical Center

II. **The following agencies, organizations, and individuals will be notified of the completion of the EA/FONSI:**

Steve Carter, Northwest Hardwoods
Cow Creek Band of Umpqua Indians
Nicole Czarnomski, Oregon Natural Resources Council
Robert P. Davison, Wildlife Management Institute
Douglas Forest Protective Association
Francis Eatherington , Umpqua Watersheds, Inc.
Chad Hanson, John Muir Project
Daniel Johnson, Douglas Timber Operators
National Marine Fisheries Service
Oregon Department of Agriculture
Oregon Department of Environmental Quality
Oregon Department of Fish and Wildlife
Ronald Yockim, Attorney for Douglas County Commissioners
U.S. Fish and Wildlife Service

III. **List of Preparers:**

| | |
|---|---|
| Bill Adams | Fuels Management |
| Paul Ausbeck | EA Coordinator and Editor |
| Gary Basham | Botany |
| Mark Beardsley | Forestry |
| Kevin Carson | Silviculture/EA Writer |
| Ed Horn | Soils |
| Todd Kuck | Hydrology |
| Frank Oliver | Wildlife/Project Lead |
| John Royce | Management Representative |
| Don Scheleen | Archaeology |
| Scott Snedaker | Fisheries |

## Literature Cited and References:

Federal Register 1998. Endangered and Threatened Species; Threatened Status for Two ESU's of Steelhead in Washington, Oregon, and California. U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service. March 19, 1998 (Vol. 63, Number 53).

Federal Register 1998. Endangered and Threatened Species; Threatened Status for Oregon Coast Evolutionary Significant Unit (ESU) of Coho Salmon. U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service. August 10, 1998 (Vol. 63, Number 153/Rules and Regulation).

Federal Register 2000. Endangered and Threatened Wildlife and Plants; Proposed Rule to Remove the Umpqua River Cutthroat Trout from the List of Endangered Wildlife. U.S. Department of Interior, Fish and Wildlife Service. April 19, 2000 (Vol. 65, Number 76/Rules and Regulation, pp. 20915-18).

Federal Register 2000. Endangered and Threatened Wildlife and Plants; Final Rule to Remove the Umpqua River Cutthroat Trout from the List of Endangered Wildlife. U.S. Department of Interior, Fish and Wildlife Service. April 26, 2000 (Vol. 65, Number 81/Rules and Regulations)

Goheen, D. J. 1996. The 95/96 Winter Storms: Bark Beetles and Blowdown. Southwest Oregon Forest Insect and Disease Technical Center Notes

Hann, D.W., A.S. Hester, C.L. Olsen. 1999. Organon, Edition 6.0. Department of Forest Resources, Oregon State University, Corvallis, Oregon.

Hayes, J. P., S. Chan, W. Emmingham, J. Tappeiner, L. Kellogg, and J. Bailey. Wildlife Response to Thinning Young Forests in the Pacific Northwest. Journal of Forestry. 95(8):28- 33.

Hessberg, P.F.; D.J. Goheen; R.V. Bega. 1995. Black Stain Root Disease of Conifers. Forest Insect & Disease Leaflet 145. US Department of Agriculture, Forest Service. 9 p.

Oregon Department of Environmental Quality. 1998. Oregon's Proposed 1998 List of Water Quality Limited Water Bodies under Section 303(d)(1) of the Clean Water Act. Portland, Oregon.

Tappeiner, J. C., D. Huffman, D. Marshall, T. Spies, and J. Bailey. Density, Ages, and Growth Rates in Old-Growth and Young-Growth Forests in Coastal Oregon. Canadian Journal of Forest Research. 27(5):638-648.

USDA Forest Service and USDI Bureau of Land Management. 1994. Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl. Standards and Guidelines for Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl.

U.S. Department of Agriculture (USDA) U.S. Forest Service Umpqua National Forest, and U.S. Department of the Interior (USDI) Bureau of Land Management Medford District and Roseburg District. 1999. South Umpqua River/Galesville Late-Successional Reserve Assessment. LSR #R0223.

USDA Forest Service and USDI Bureau of Land Management. 2001. Record of Decision for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines in Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl.

USDI, Bureau of Land Management, Washington Office, Washington, D.C. 1985. Northwest Area Noxious Weed Control Program Environmental Impact Statement.

USDI, Bureau of Land Management, Washington Office, Washington, D.C. 1987. The Supplemental Record of Decision for the Northwest Area Noxious Weed Control Program.

USDI Bureau of Land Management. 1994. Roseburg District. Proposed Resource Management Plan/Environmental Impact Statement.

USDI Bureau of Land Management. 1995. Roseburg District. Record of Decision and Resource Management Plan.

USDI Bureau of Land Management. 1995. Roseburg District. Integrated Weed Control Plan and Environmental Assessment.

USDI Bureau of Land Management. 1996. Roseburg District. Stouts/Poole/Shively-O'Shea Watershed Analysis

# APPENDICES

Description of Proposed Treatments

Watershed Environmental Baseline - NMFS Matrices and ESA Effects Determination

Vicinity and Unit Maps

Critical Elements of the Human Environment

# APPENDIX A

# DENSITY MANAGEMENT TREATMENT DESCRIPTIONS

**Treatment 1 - Variable Spacing**

Variable spacing treatment would remove approximately 50 percent of the conifers that are currently present. In Section 9, trees removed would be in the 6 inch to 18 inch diameter classes. In Section 27, trees would be removed in the 6 inch to 12 inch diameter classes. Trees selected for retention would reflect the full range of diameters and heights present. This would release the remaining trees and regeneration in the understory. Application of variable spacing would produce canopy gaps and tree clumps in the stands. Smaller diameter trees would not be marked for removal or require felling, although it is anticipated up to 25 percent of these smaller trees would be lost in the felling and yarding process. Crown closure following treatment is estimated to average 45- to-50 percent.

Hardwoods would not be marked for cutting or removal, but could potentially be damaged by falling and yarding operations. Smaller hardwoods that are damaged are capable of re-sprouting and would remain as a component of the stands. Larger hardwoods would be favored for retention by removing surrounding conifers.

Natural regeneration would occur in Section 27 because of the clumping and variable spacing of residual trees. In Section 9 a mixture of Douglas-fir and western hemlock would be under-planted to encourage development of a secondary canopy layer.

**Treatment 2 - 60 to 70 Trees per Acre**

There are four areas proposed for treatment where the existing stocking levels would be reduced to approximately 60-70 trees per acre, composed of both conifers and hardwoods. The trees removed would be in the intermediate and suppressed crown classes. The largest trees would be maintained with an expected increase in the quadratic mean diameter to 16.8 inches following treatment. The relative density following treatment would be approximately 0.29. This is a lower value than would be present following a variable spacing treatment. This treatment would create canopy gaps which would encourage vegetative development in the understory, providing for both horizontal and vertical structural diversity. These areas would be under-planted with a mixture of Douglas-fir, incense-cedar, and western hemlock to encourage development of a future secondary canopy.

**Treatment 3 - 50% Removal**

The LSRA and the REO exemption criteria require that no more than 10 percent of the project area could be subject to a broad spacing treatment of less than 50 trees per acre. One area of approximately 10 acres is proposed for removal of about one-half of the existing trees. This treatment would reduce the stocking to less than 50 trees per acre. This area currently has a lower stocking level than other areas, with an understory that is primarily composed of hazel and evergreen huckleberry. Very few hardwoods are present as a consequence of previous silvicultural treatments. Tree diameters are larger in this area as a result of the growing space

afforded by lower stocking levels. The largest trees would be retained, many approaching 20 inches in diameter. This area would be under-planted with a mixture of Douglas-fir, incense-cedar, and western hemlock to encourage development of a future secondary canopy. In old-growth stands, the average density of large trees, greater than 20 inches in diameter, forming the main canopy ranged from 20 to 50 trees per acre. (Tappeiner, et.al., 1997) In the representative old-growth stand conditions to define the desired future condition for this treatment, the number of large trees is 36 per acre.

# APPENDIX B

# AQUATIC BASELINE ENVIRONMENTAL CONDITIONS AND DICHOTOMOUS KEY FOR ESA EFFECTS DETERMINATION

# Matrix for Sixth Field Effects of the Slimewater Density Management

Checklist for documenting environmental baseline and effects of proposed action (Slimewater Density Management, Units A, B, D, E, F, G, H, and I) on indicators at the 6TH field watershed level (Shively O'Shea Subwatershed).

| FACTORS & INDICATORS? | ENVIRONMENTAL BASELINE | | | EFFECTS OF THE ACTION(S) | | |
|---|---|---|---|---|---|---|
| | PROPERLY FUNCTIONING | AT RISK | NOT PROPERLY FUNCTIONING | RESTORE | MAINTAIN | DEGRADE |
| **Water Quality** | | | | | | |
| Temperature | | prof. judgementC | | | NEPA | |
| Sediment | | prof. judgementC | | | NEPA | |
| Chem. Contam./Nut. | prof. judgement | | | | NEPA | |
| **Habitat Access** | | | | | | |
| Physical Barriers* | | | personal observ. | | NEPA | |
| **Habitat Elements** | | | | | | |
| Substrate | | prof. judgement | | | NEPA | |
| Large Woody Debris | | prof. judgement | | | NEPA | |
| Pool Frequency | | prof. judgement | | | NEPA | |
| Pool Quality | | prof. judgement | | | NEPA | |
| Off-Channel Habitat* | | prof. judgement | | | NEPA | |
| Refugia* | | prof. judgement | | | NEPA | |
| **Channel Cond. & Dyn** | | | | | | |
| Width/Depth Ratio | | prof. judgement | | | NEPA | |
| Streambank Condition | | prof. judgement | | | NEPA | |
| Floodplain Connectivity | | prof. judgement | | | NEPA | |
| **Flow/Hydrology** | | | | | | |
| Peak/ Base Flows* | | | Shively O'Shea WA, CanCan WA, prof. judgement | | NEPA | |
| Drainage Network Incr.* | | | Shively O'Shea WA, CanCan WA, prof. judgement | | NEPA | |
| **Watershed Conditions** | | | | | | |
| Road Dens. & Location* | | | Shively O'Shea WA, CanCan WA, prof. judgement | | NEPA | |
| Disturbance History* | | | Shively O'Shea WA, CanCan WA, prof. judgement | | NEPA | |
| Riparian Reserves* | | | Shively O'Shea WA, CanCan WA, prof. judgement | | NEPA | |

* This indicator is evaluated at the entire 6th field watershed level and not at the index stream reach level.

C Judgement based on temperature data for the South Umpqua River provided in ODEQ 1998 303d report.

# Matrix for Fifth Field Effects of the Slimewater Density Management

Checklist for documenting environmental baseline and effects of proposed action (Slimewater Density Management, Units A, B, D, E, F, G, H, and I) on indicators at the 5TH field watershed level (South Umpqua Watershed). Index stream reach:

| FACTORS & INDICATORS? | ENVIRONMENTAL BASELINE | | | EFFECTS OF THE ACTION(S) | | |
|---|---|---|---|---|---|---|
| | PROPERLY FUNCTIONING | AT RISK | NOT PROPERLY FUNCTIONING | RESTORE | MAINTAIN | DEGRADE |
| **Water Quality** | | | | | | |
| Temperature | | | ODEQ 1998 Stouts Creek | | NEPA | |
| Sediment | | | PFANKUCH Survey 1995 | | NEPA | |
| Chem. Contam./Nut. | professional judgement | | | | NEPA | |
| **Habitat Access** | | | | | | |
| Physical Barriers* | | | personal observation | | NEPA | |
| **Habitat Elements** | | | | | | |
| Substrate | | PFANKUCH Survey 1995 | | | NEPA | |
| Large Woody Debris | | | PFANKUCH Survey 1995 ODEQ 1998 Listing | | NEPA | |
| Pool Frequency | | PFANKUCH Survey 1995 | | | NEPA | |
| Pool Quality | | PFANKUCH Survey 1995 | | | NEPA | |
| Off-Channel Habitat* | | professional judgement | | | NEPA | |
| Refugia* | | professional judgement | | | NEPA | |
| **Channel Cond. & Dyn** | | | | | | |
| Width/Depth Ratio | | professional judgement | | | NEPA | |
| Streambank Condition | | | PFANKUCH Survey 1995 | | NEPA | |
| Floodplain Connectivity | | professional judgement | | | NEPA | |
| **Flow/Hydrology** | | | | | | |
| Peak/ Base Flows* | | | , Watershed Analysis | | NEPA | |
| Drainage Network Incr.* | | | , Watershed Analysis | | NEPA | |
| **Watershed Conditions** | | | | | | |
| Road Dens. & Location* | | | , Watershed Analysis | | NEPA | |
| Disturbance History* | | | , Watershed Analysis | | NEPA | |
| Riparian Reserves* | | | , Watershed Analysis | | NEPA | |

* This indicator is evaluated at the entire 5th field watershed level and not at the index stream reach level.

, Watershed Analyses include Canyonville/Canyon Creek, Stouts/Poole/Shively-O'Shea, and John Days Coffee.

## E. Dichotomous Key for Making Endangered Species Act (ESA) Determination of Effects

1. Are there any proposed/listed anadromous salmonids and/or proposed/designated critical habitat in the watershed or downstream from the watershed?

   NO.....No effect
   **YES.....Go to 2**

2. Will the proposed action have any effect whatsoever[1] on the species and/or critical habitat?

   NO.....No effect
   **YES.....Go to 3**

3. Does the proposed action(s) have the potential to hinder attainment of relevant properly functioning indicators (from section G)?

   **NO.....Go to 4**
   YES.....Likely to adversely affect

4. Does the proposed action(s) have the potential to result in "take"[2] of proposed/listed anadromous salmonids or destruction/adverse modification of proposed/designated critical habitat?

   **A. There is a negligible (extremely low) probability of take of proposed/listed anadromous salmonids or destruction/adverse modification of critical habitat.**
   **.....Not likely to adversely affect.**

   B. There is more than a negligible probability of take of proposed/listed anadromous salmonids or destruction/adverse modification of critical habitat.
   .....Likely to adversely affect

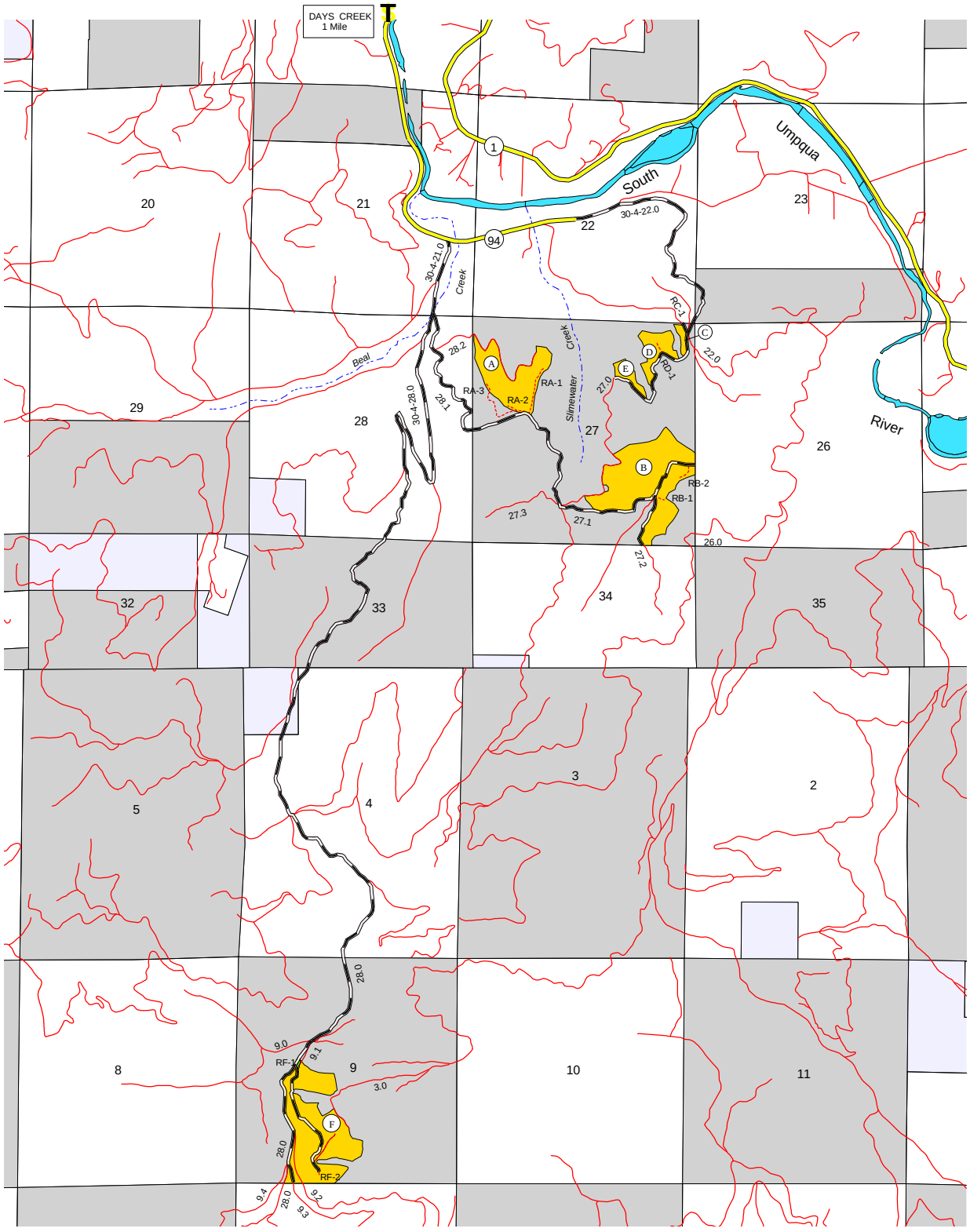
[1] "Any effect whatsoever" includes small effects, effects that are unlikely to occur, and beneficial effects. I.e., a "no effect" Determination is only appropriate if the proposed action will literally have no effect whatsoever on the species and/or critical habitat, not a small effect, an effect that is unlikely to occur, or a beneficial effect.

[2] "Take" - The ESA (Section 3) defines take as "to harass, harm, pursue, hunt, shoot, wound, trap, capture, collect or attempt to engage in any such conduct". The USFWS further defines "harm" as "significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering", and "harass" as "actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering".

# APPENDIX C

# ACCESS AND UNITS MAPS

# SLIMEWATER DENSITY MANAGEMENT PROJECT




N
W E
S

T30,31S R4W

Willamette Meridian, Roseburg, OR.

0 1 Miles

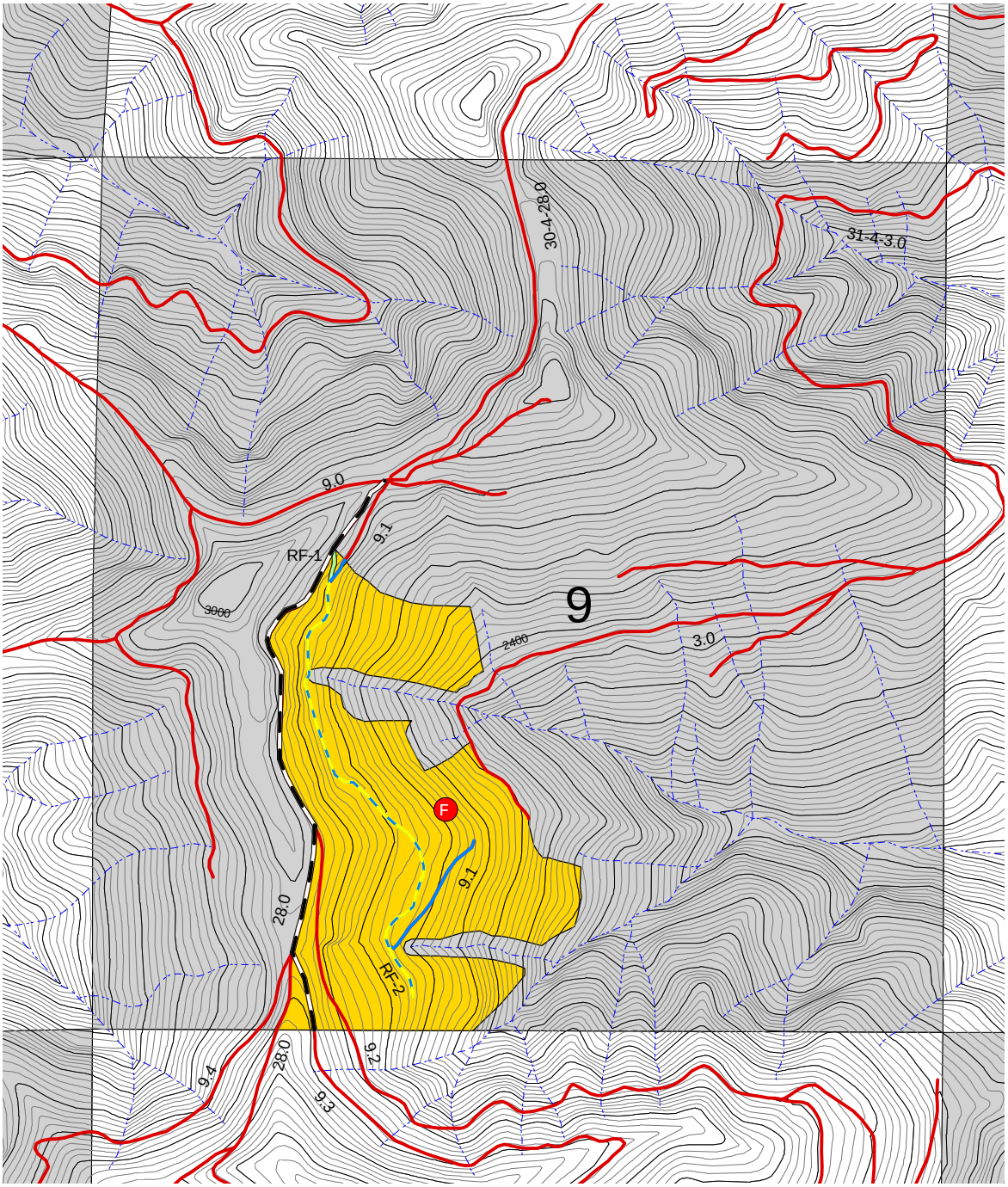
No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of this data for individual or aggregate use with other data. Original data was compiled from various sources. This information may be updated without notification.

- Road to be Constructed
- Paved Highway
- Haul Route
- Existing Road
- Road To Be Renovated

- Density Thin Area
- O&C Land
- PD Land
- Private Land

12-11-2000

# SLIMEWATER DENSITY MANAGEMENT PROJECT




N
W E
S

T31S R4W

Willamette Meridian, Roseburg, OR.

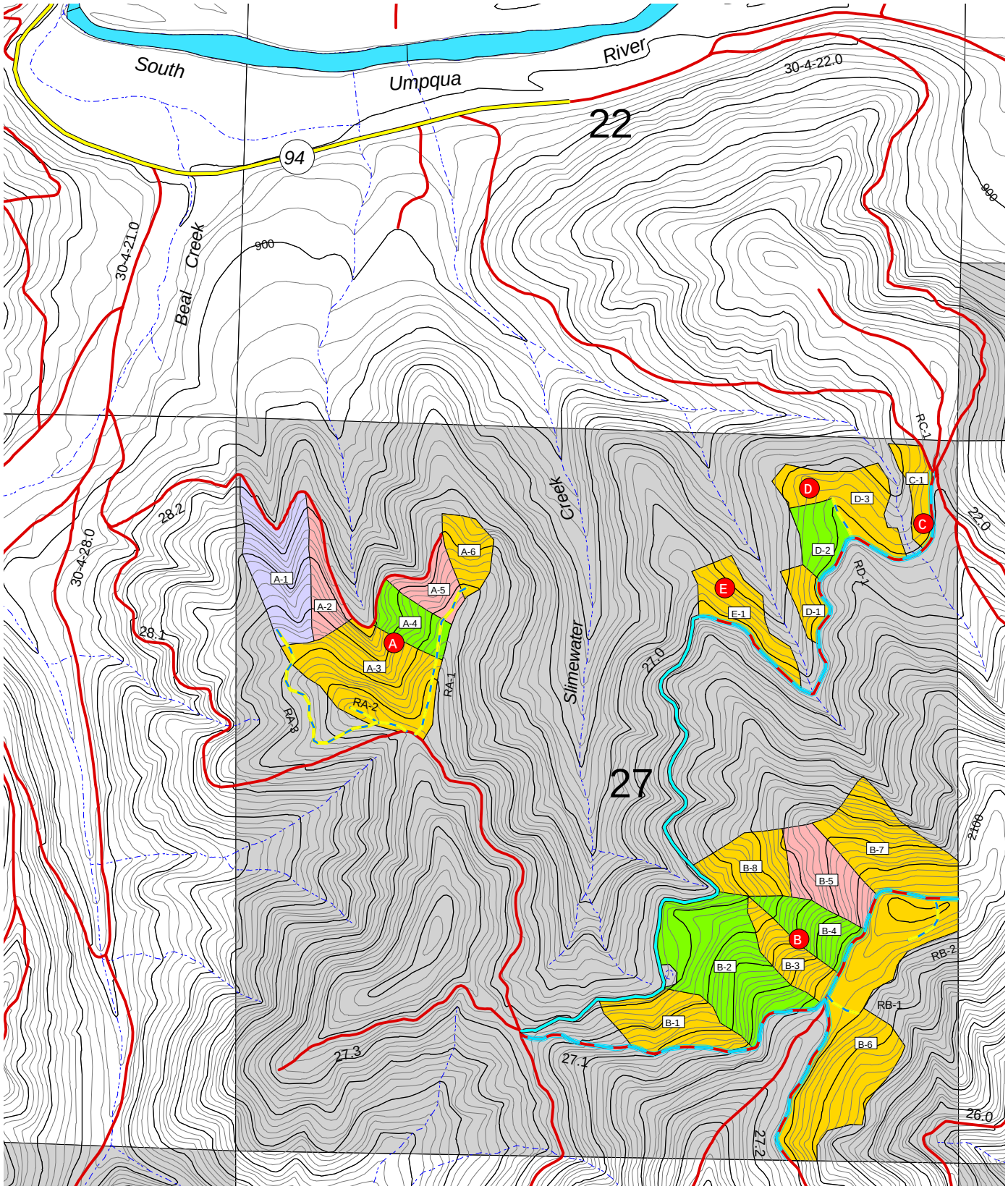
1000 0 1000 Feet

No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of this data for individual or aggregate use with other data. Original data was compiled from various sources. This information may be updated without notification.

- Decommission/Till
- Renovate, Decommission/Till
- Construct, Decommission/Till
- Renovate, Permanent Rock
- Existing Road
- 100' Contour
- 20' Contour
- Stream
- Thin Area(Variable Spacing)
- O&C Land
- Private Land

8-23-2000

# SLIMEWATER DENSITY MANAGEMENT PROJECT




N
W E
S

T30S R4W
Willamette Meridian, Roseburg, OR.

1000 0 1000 Feet

No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of this data for individual or aggregate use with other data. Original data was compiled from various sources. This information may be updated without notification.

Stream
Paved Highway
Existing Road
Renovate, Permanent/Rock
Renovate, Decommission/Block
Decommission/Block
Renovate, Decommission/Till
100' Contour
20' Contour

Thin Area(Variable Spacing)
Thin Area(60-70 Trees/Acre)
Thin Area(50 % Removal)
No Treatment Area
O&C Land
Private Land

9-20-2000

# APPENDIX D
# CRITICAL ELEMENTS OF THE HUMAN ENVIRONMENT

The following elements of the human environment are subject to requirements specified in statute, regulation, or executive order. These resources or values either **not present** or **would not be affected by the proposed actions or alternative** , unless otherwise described in this EA. This negative declaration is documented below by individuals who assisted in the preparation of this analysis.

| ELEMENT | NOT PRESENT | NOT AFFECTED | IN TEXT | INITIALS | TITLE |
|---|---|---|---|---|---|
| Air Quality | | | | | |
| Areas of Critical Environmental Concern | | | | | |
| Cultural Resources | | | | | |
| Environmental Justice | | | | | |
| Farm Lands (prime or unique) | | | | | |
| Floodplains | | | | | |
| Non-Native and Invasive Species | | | | | |
| Native American Religious Concerns | | | | | |
| Threatened or Endangered Wildlife Species | | | | | |
| Threatened or Endangered Plant Species | | | | | |
| Wastes, Hazardous or Solid | | | | | |
| Water Quality Drinking/Ground | | | | | |
| Wetlands/Riparian Zones | | | | | |
| Wild & Scenic Rivers | | | | | |
| Wilderness | | | | | |
| Visual Resource Management | | | | | |